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(54)名 稱: 吸收性物體

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[57]申請專利範圍:

1. 一種吸收性物體, 包含
 - 一液體滲透性頂層;
 - 一非液體滲透性背層;
 - 一吸收性核心, 設置在頂層和背層之間;

一液體滲透性分隔結構物, 可將頂層自核心上移動開, 此分隔結構物是設置在頂層和吸收性核心之間, 具有一未壓縮形狀、一壓縮形狀、一縱長向中心線、一橫側向中心線, 並包含一上部位、一下部位、及二相對的側邊, 其中

上部位是設置在頂層和下部位之間, 且當分隔結構物在其未壓縮形狀時, 該上部位至少有一部份和該下部位的一部份重疊,

當分隔結構物處於其未壓縮形狀時, 該下部位是和核心鄰接, 且該下

部位至少有二部份連接至該核心而形成下部位上之附著區域,

- 當分隔結構物被自二側壓縮時, 該相對之側邊會向內朝向縱長向中心線移動, 而使得至少上部位之一部份可將頂層自吸收性核心上移動開。

2. 根據申請專利範圍第1項之吸收性物體, 其中分隔結構物包含一摺疊起之片狀物。

3. 根據申請專利範圍第2項之吸收性物體, 其中該片狀物係沿至少一條縱長向軸線加以摺疊。

4. 根據申請專利範圍第3項之吸收性物體, 其中該片狀物係形成管狀。

5. 根據申請專利範圍第3項之吸收性物體, 其中該片狀物至少具有二個縱長向之摺疊處。

6. 根據申請專利範圍第5項之吸收性物

(2)

體，其中分隔結構物具有二個縱長向邊緣及二個橫側向邊緣，且該等縱長向摺疊處係靠近於分隔結構物之縱長向邊緣。

7. 根據申請專利範圍第6項之吸收性物體，其中該片狀物係摺疊成英文字母“C”之形狀。

8. 根據申請專利範圍第6項之吸收性物體，其中該摺疊起之片狀物係一扁平之管狀物。

9. 根據申請專利範圍第6項之吸收性物體，其中該片狀物具有二個縱長向邊緣，其係摺疊至該片狀物之一側面上而互相重疊。

10. 根據申請專利範圍第1、2、5、6、7或8項之吸收性物體，其中分隔結構物之下部位上的附著區域是由一方位大致上朝向縱長向方向之分隔結構物固定裝置連接至核心上。

11. 根據申請專利範圍第10項之吸收性物體，其中分隔結構物固定裝置包含一種粘著劑。

12. 根據申請專利範圍第1項之吸收性物體，其中分隔結構物之下部位上至少有二個分別設置在縱長向中心線之二相對側上的區域，係以一方向大致朝向縱長向方向之分隔結構物固定裝置連接至核心上。

13. 根據申請專利範圍第12項之吸收性物體，其中該分隔結構物固定裝置至少包含一個方位朝向縱長向之粘著劑區域，其係設置在衛生棉縱長向主中心線之區域上。

14. 根據申請專利範圍第12項之吸收性物體，其中該分隔結構物固定裝置包含二個分隔開之朝向縱長向的粘著劑區域，係設置在衛生棉縱長向主中心線之二相對側上。

15. 根據申請專利範圍第1項之吸收性物體，其中當吸收性物體受到約0.01磅/吋²至約2.5磅/吋²之側向壓縮力的作用時，分隔結構物會自其未壓縮

形狀移動至壓縮形狀。

16. 根據申請專利範圍第1項之吸收性物體，其中當吸收性物體受到約0.05磅/吋²至約0.5磅/吋²之側向壓縮力的作用時，分隔結構物會自其未壓縮形狀移動至壓縮形狀。

17. 根據申請專利範圍第1項之吸收性物體，其中頂層至少有一部份會自核心上分離開一段約0.5公分至約6公分之距離。

18. 根據申請專利範圍第1項之吸收性物體，其中頂層至少有一部份會自核心上分離開一段約1公分至約3公分之距離。

19. 根據申請專利範圍第1項之吸收性物體，其中分隔結構物包含多於一個之材料件。

20. 根據申請專利範圍第1項之吸收性物體，更包含至少一層滲透層，係設置在頂層和分隔結構物之間，而使該上部位鄰接於一滲透層，且當分隔結構物自二側壓縮時，該上部位至少有一部份可將該滲透層和頂層自吸收性核心上移動開。

21. 根據申請專利範圍第10項之吸收性物體，其中該吸收性物體為一衛生棉，且其中該分隔結構亦具有吸收性。

22. 根據申請專利範圍第1項之吸收性物體，更包含一裝置，用以控制核心自背層上之分離。

23. 根據申請專利範圍第1項之吸收性物體，其中分隔結構物包含一摺疊起之片狀物，其係至少一條縱長向軸線加以摺疊。

24. 根據申請專利範圍第23項之吸收性物體，其中分隔結構物具有二個縱長向邊緣及二個橫側向邊緣，其中該片狀物至少具有二個縱長向之摺疊處，且該等縱長向摺疊處係靠近於分隔結構物之縱長向邊緣。

25. 根據申請專利範圍第24項之吸收性物體，其中該片狀物係摺疊成英文

(3)

母“C”之形狀。

26. 根據申請專利範圍第 24 項之吸收性物體，其中該褶疊起之片狀物係一扁平之管狀物。

27. 根據申請專利範圍第 25 或 26 項之吸收性物體，其中分隔結構物是由一方位大致上朝向縱長向方向之分隔結構物固定裝置連接至核心上。

28. 根據申請專利範圍第 22 項之吸收性物體，其中該用以控制分離之裝置是一具有縱長向皺褶之材料件，其可將吸收性核心連接至背層上。

29. 根據申請專利範圍第 22 項之吸收性物體，其中該用以控制分離之裝置是一將吸收性核心接至背層之軟弱材料，所以該核心可在未附著末端邊緣處自背層上分離開，直到因該軟弱材料繃緊而受到限制為止。

30. 根據申請專利範圍第 28 或 29 項之吸收性物體，其中核心具有一面對衣物之側面，及一未附著末端邊緣，而背層具有一面對核心之側面，其中核心之面對衣物側之未附著末端邊緣可自背層之面對核心側上分離開約 1 公分至約 6 公分之距離。

31. 根據申請專利範圍第 28 或 29 項之吸收性物體，其中核心具有一面對衣物之側面，而背層具有一面對核心之側面，當核心在該未附著末端邊緣處自背層上分離開時，該吸收性物體在核心之面對衣物側與背層之面對核心側間形成一個約 3° 至約 60° 之夾角。

32. 根據申請專利範圍第 28 或 29 項之吸收性物體，更包含一橫側向皺褶部，可在該未附著末端邊緣處將核心連接至背層上。

33. 根據申請專利範圍第 28 或 29 項之吸收性物體，更包含第二個未附著末端邊緣。

34. 根據申請專利範圍第 28 或 29 項之吸

收性物體，其中該橫側向接縫是位於該分隔開末端邊緣間之二者間縱長向距離的三分之一處。

35. 根據申請專利範圍第 28 或 29 項之吸收性物體，其中該橫側向接縫是由靠在該吸收性物體上之使用者身體和使用著貼身衣物所形成之相向之力所形成的。

36. 根據申請專利範圍第 28 項之吸收性物體，其中該縱長向皺褶之寬度範圍係自約 2 公釐至約 15 公釐。

圖示簡單說明：

圖 1 是本創作衛生棉之上視圖。

圖 2 是沿圖 1 中線 2-2 所取之剖面圖，其中顯示未壓縮形狀之本創作衛生棉。

圖 3 是沿圖 1 中線 3-3 所取之未壓縮形狀衛生棉之剖面圖。

圖 4 是從一與圖 2 相似角度所取之剖面圖，其中顯示壓縮形狀之衛生棉。

圖 5 是從一與圖 3 相似之角度所取之剖面圖，其中顯示要打開至張開位置之壓縮形狀之衛生棉。

圖 6 顯示本創作之另一種衛生棉，在其中在頂層及分隔結構物中設有一滲透性材料。

圖 7A 至 11 顯示不同之分隔結構物

圖 12 及 13 顯示分隔結構物不同之支撐方式。

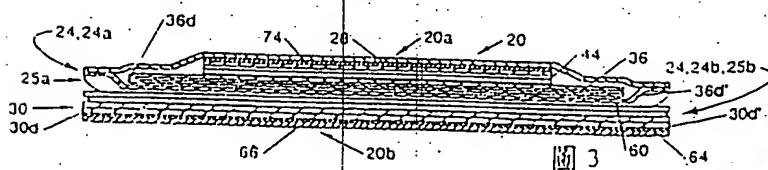
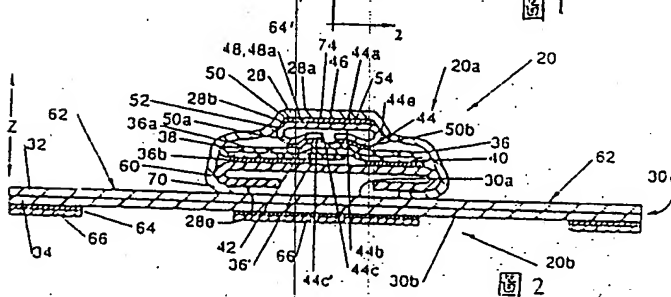
圖 14 顯示本創作之另一種衛生棉，其具有一條狀薄片，設置於分隔結構物內部。

圖 15 顯示一具有另一種外形之選擇性夾層的衛生棉。

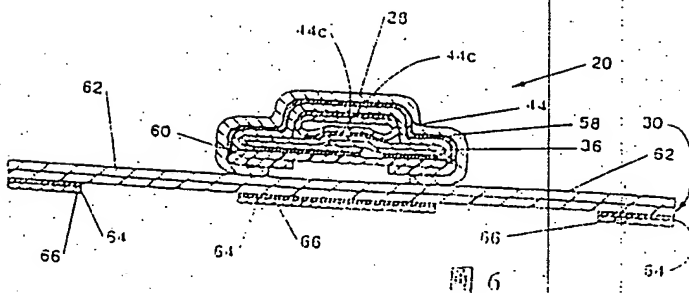
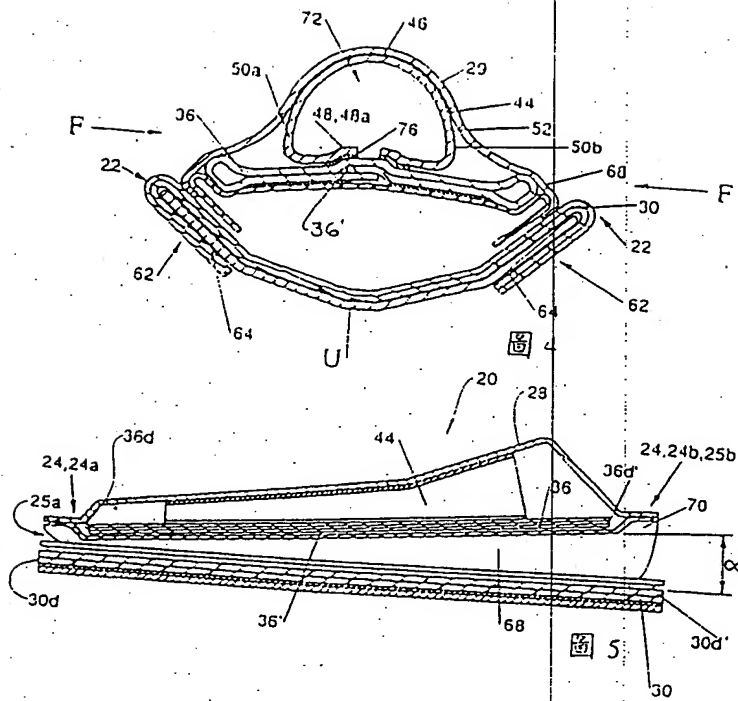
圖 16 是一相似於圖 5 之視圖，顯示不具有選擇性夾層之衛生棉。

圖 17 至 20 顯示用以控制衛生棉核心自背層分離開之各種裝置。

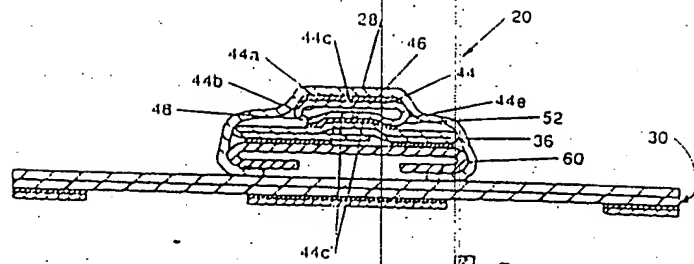
FIG. 1 is a schematic diagram of a cross-section of a device, likely a medical device such as a catheter or probe. The device features a central shaft (20) with a handle (22) and a distal tip (24). The shaft is surrounded by a sheath (26) and a sleeve (28). The sleeve has a proximal end (28a) and a distal end (28d). The distal end of the sleeve is connected to a distal tip (24) which has a central opening (24a) and a side opening (24b). The device is shown in a cross-section with various internal components and layers labeled with reference numerals.



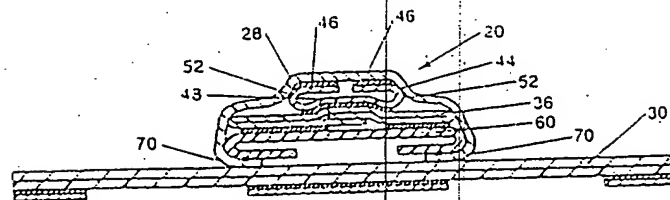
(5)



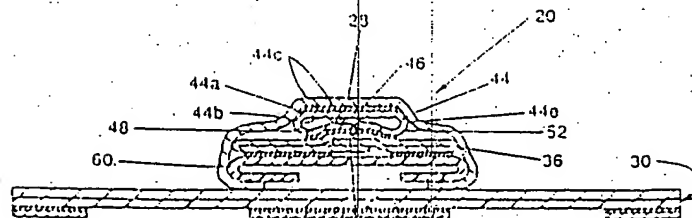
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7

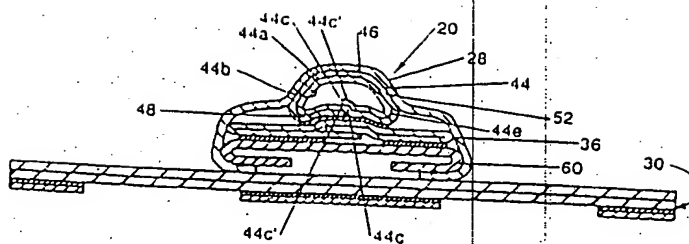


7A

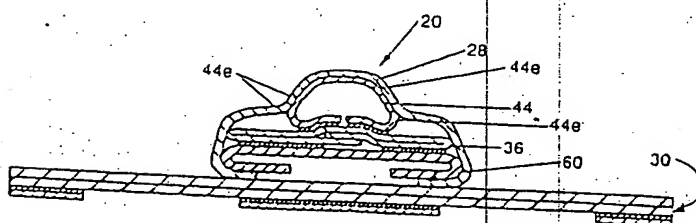


8

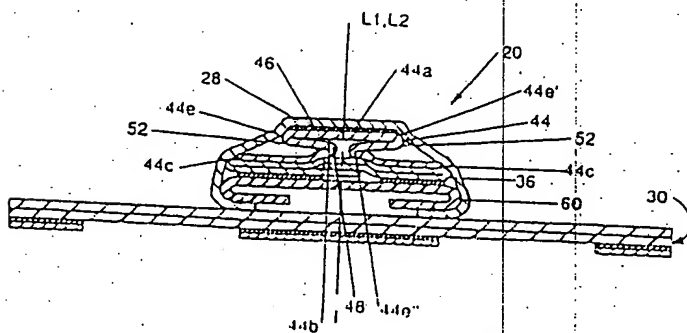
(7)



29



10 圖



三

(8)

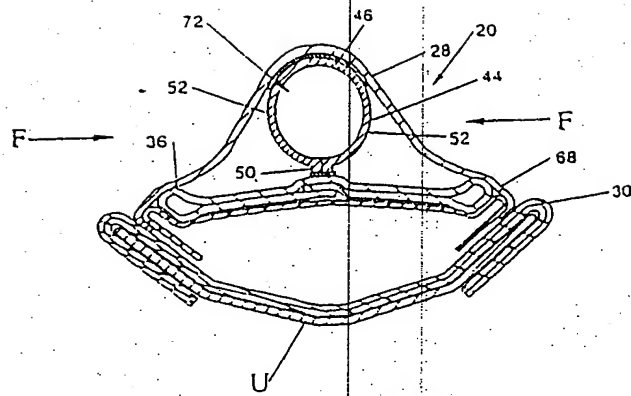


FIG 12

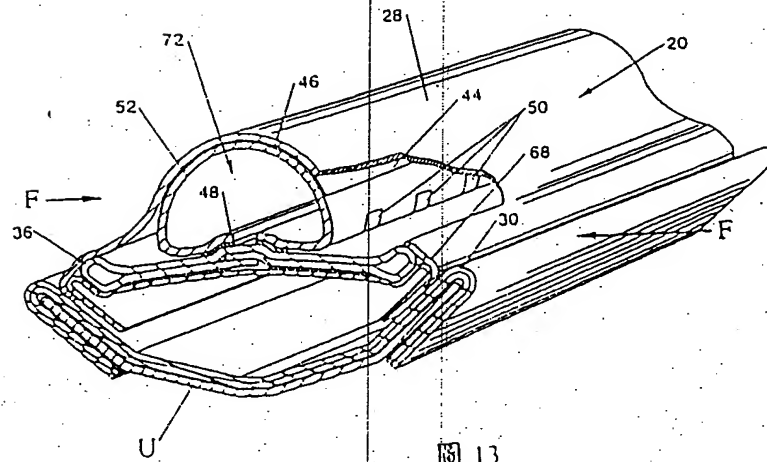


FIG 13

(9)

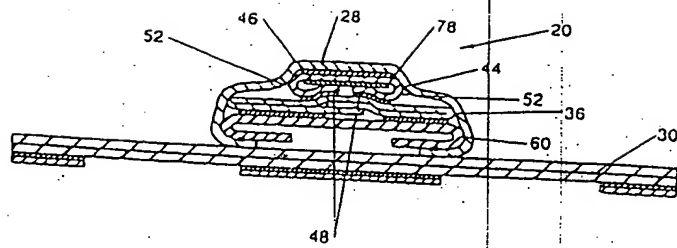


FIG 14

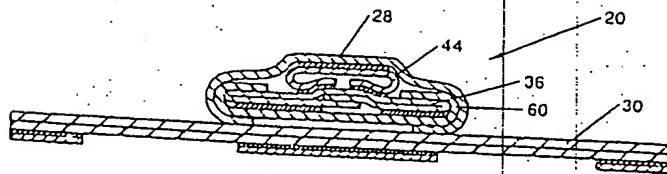


FIG 15

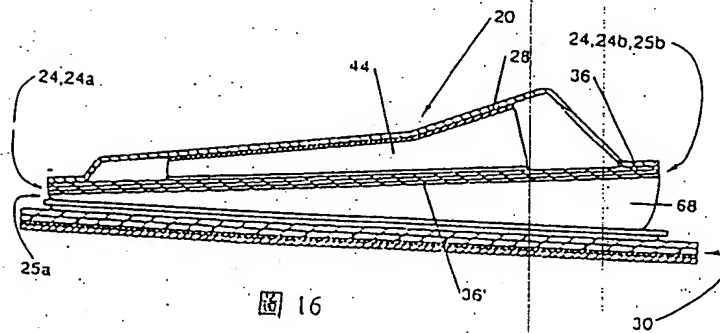


FIG 16

(10)

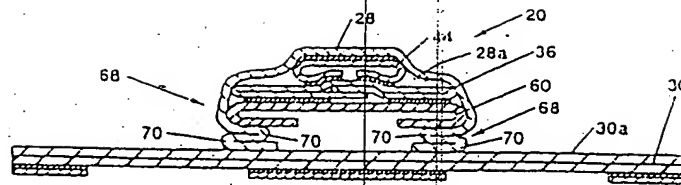


圖 17

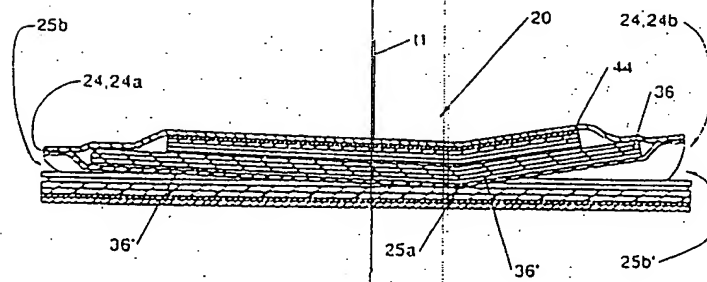


圖 18

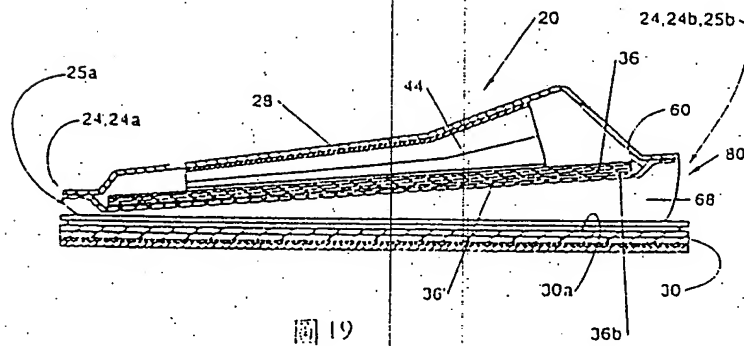
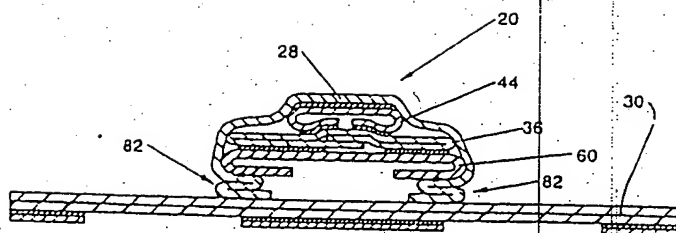


圖 19

(11)



20

改請 8522008 / 85年12月6日 修正
補充

第 85105220 號專利申請案改請新型
英文說明書修正頁 (85年12月)

ROC (Taiwan) Patent Application No. 85105220
Amended Pages of Specification (December 1996)

1

COMPOUND SANITARY NAPKIN

ABSTRACT OF THE DISCLOSURE

The present invention pertains to a compound sanitary napkin. The compound sanitary napkin comprises a primary absorbent member including an absorbent core and an outer cover. The primary absorbent member has a base and an apex; the apex being vertically opposed to the base. The width of the base is greater than the width of the apex. The compound sanitary napkin further comprises a secondary absorbent member that is joined with the primary absorbent member juxtaposed the base. The secondary absorbent member preferably comprises a liquid impervious backsheet and an absorbent material joined thereto. Optionally, the secondary absorbent member includes a backsheet, a topsheet joined to the backsheet and an absorbent core disposed between the backsheet and the topsheet.

COMPOUND SANITARY NAPKIN

FIELD OF THE INVENTION

The present invention relates to disposable sanitary napkins. As used herein, sanitary napkins are considered to be absorbent devices designed to be worn externally of the body by women, usually during their menstrual periods, and to receive and contain menses and other vaginal discharges. Disposable sanitary napkins are intended to be discarded after use and soiling rather than being cleaned and reused.

BACKGROUND OF THE INVENTION

In their simplest form, disposable sanitary napkins comprise an absorbent element (sometimes referred to as an absorbent core) interposed between a liquid pervious body-contacting element (sometimes referred to as a topsheet or an overwrap) and a liquid impervious protective barrier (sometimes referred to as a backsheet). The absorbent element is intended to receive and contain menses and other vaginal discharges. The body-contacting element is intended to provide more or less comfortable and dry-feeling contact with body surfaces while allowing free passage of fluids therethrough into the absorbent element. The protective barrier is intended to prevent menses or other vaginal discharges which are expelled or which escape from the absorbent element from soiling the user's garments.

In addition to the three functional elements mentioned above, disposable sanitary napkins are generally provided with means for supporting the device adjacent the user's crotch area, even as the user moves, where it can most effectively perform its intended function. Typically, sanitary napkins are provided with an adhesive attachment means for securing the device to the inner crotch area of the user's undergarments.

While previously known sanitary napkins do perform their intended function, each conventional design suffers from certain deficiencies in one or more of absorbency of body fluids, protection of the user's garments from soiling, and/or physical comfort to the user.

With respect to disposable sanitary napkins, at least two general classes presently exist. One such class is identified as being intended for the absorption of medium to high menstrual flows. These sanitary napkins offer a relatively high absorptive capacity. Absorptive capacity is commonly achieved by providing the

sanitary napkin with a relatively thick and bulky absorbent member. While having a relatively high absorptive capacity, the bulkiness of the absorbent member may cause a certain degree of wearing discomfort.

A second class of sanitary napkins are intended for light or low menstrual flows and are commonly referred to as pantliners or pantishields. Sanitary napkins of this class, as a group, are thinner, somewhat more flexible and generally more comfortable than those of the first class. However, sanitary napkins of the second class typically lack the absorptive capacity of sanitary napkins of the first class.

One attempt to provide the benefits of the previously described two classes of sanitary napkins into a single compound sanitary napkin is disclosed in commonly assigned U.S. Patent No. 4,425,130 issued to DesMarais on January 10, 1984. The compound sanitary napkin of DesMarais comprises a primary menstrual pad and a panty protector joined to one another at their corresponding ends in such a manner that the two constituents are free to move relative to one another along essentially their entire common length. The primary menstrual pad is intended to absorb the bulk of the bodily fluids discharged by the user, while the panty protector is intended to protect the user's garments from soiling. In use, the relative freedom of movement between the primary menstrual pad and the panty protector serves to maintain the primary menstrual pad adjacent the user's crotch region while the panty protector remains associated with the user's undergarment. While the relative freedom of movement between the primary menstrual pad and the panty protector serves to maintain the primary menstrual pad near the user's crotch region, this freedom of movement may lead to a lack of stability if the primary menstrual pad moves laterally beyond the side edges of the panty protector, providing an opportunity for soiling the user's undergarment.

Furthermore, the relative freedom of movement between the primary menstrual pad and the panty protector alone may be insufficient to capture bodily fluid as it exits the wearer's vaginal opening. The primary menstrual pad is preferably narrow enough to at least reside partially within the external genitalia. Optionally, the primary menstrual pad may be wider than the distance between the labia majora, but exhibits a lateral compression or conformability at relatively low forces, such as the forces exerted by the soft tissue of the female external genitalia, such that a portion of the primary menstrual pad is able to at least reside partially within the external female genitalia. By being conformable at relatively low forces, the primary absorbent member remains comfortable during use. In addition, the primary

menstrual pad preferably exhibits a resilient recovery to enable the pad to conform to the body as the pad and body interface is subjected to shape changes.

As the primary menstrual pad is made narrower to fit the body, the panty protector preferably remains sufficiently wide enough to provide a stable attachment to the wearer's undergarment and to sufficiently cover the undergarment to protect it from soiling.

SUMMARY OF THE INVENTION

The present invention pertains to a compound sanitary napkin. The compound sanitary napkin comprises a primary absorbent member including an absorbent core and an outer cover. The primary absorbent member has a base and an apex; the apex being vertically opposed to the base. The width of the base is greater than the width of the apex. The compound sanitary napkin further comprises a secondary absorbent member that is joined with the primary absorbent member juxtaposed the base. The secondary absorbent member preferably comprises a liquid impervious backsheet and an absorbent material joined thereto. Optionally, the secondary absorbent member comprises a backsheet, a topsheet joined to the backsheet and an absorbent core disposed between the backsheet and the topsheet.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed that the present invention will be better understood from the following description in conjunction with the following drawings, in which like reference numbers identify identical elements and wherein:

FIG. 1 is a top plan view of one embodiment of the compound sanitary napkin of the present invention;

FIG. 2 is a side elevation view of the compound sanitary napkin shown in FIG. 1;

FIGS. 3 and 3A are cross-sectional views of the compound sanitary napkin shown in FIGS. 1 and 2 as taken along section line 3-3 of FIG. 2; and

FIGS. 4, 5, 6 and 7 are cross-sectional views of alternative embodiments of the compound sanitary napkin of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

This invention is of a body fitting compound sanitary napkin which exhibits absorbency for bodily fluids, the protection of the user's garments from soiling, and

physical comfort to the user. The term "sanitary napkin", as used herein, refers to an article which is worn by females adjacent to the pudendal region and which is intended to absorb and contain the various exudates which are discharged from the body (e.g., blood, menses, and urine) and which is intended to be discarded after a single use (i.e., it is not intended to be laundered or otherwise restored or reused). The term "compound sanitary napkin", as used herein, refers to a sanitary napkin comprised of separate constituents joined to one another to form a unitary structure. Interlabial devices which reside partially within and partially external of the wearer's vestibule are also within the scope of this invention. As used herein, the term "pudendal" refers to the externally visible female genitalia and is limited to the labia majora, the labia minora, the clitoris, and the vestibule.

FIGS. 1-3 show one preferred embodiment of a compound sanitary napkin 20 of the present invention. As can be seen in FIGS. 1-3, the compound sanitary napkin 20 comprises a primary absorbent member 30 and a secondary absorbent member 50 joined together by union means 70. The compound sanitary napkin has two surfaces, a body contacting or facing surface 87, and a garment facing or contacting surface 55. The primary and secondary absorbent members each have corresponding body facing and garment facing surfaces. The compound sanitary napkin 20 has two centerlines, a longitudinal centerline L and a transverse centerline T. The term "longitudinal", as use herein, refers to a line, axis or direction in the plane of the compound sanitary napkin that is generally aligned with (e.g., approximately parallel to) a vertical plane which bisects a standing wearer into left and right body halves when the compound sanitary napkin is worn. The terms "transverse" or "lateral", as used herein, are interchangeable, and refer, to a line, axis, or direction which lies within the plane of the compound sanitary napkin that is generally perpendicular to the longitudinal direction.

The primary absorbent member 30 has side edges 24 and end edges 25 which together form the periphery 26 of the primary absorbent member 30. The secondary absorbent member 50 has side edges 21 and end edges 22 which together form the periphery 23 of the secondary absorbent member and the compound sanitary napkin 20. The compound sanitary napkin 20 has a first end region 27, a central region 28, and a second end region 29.

The primary absorbent member 30 is that constituent of the compound sanitary napkin 20 intended to absorb the bulk of bodily fluids discharged by the user. The primary absorbent member 30 comprises an absorbent means 33, such as absorbent core 34, and an outer cover 32 superimposed on the absorbent core 34.

(As used herein, the term "superimposed" means adjacent or juxtaposed, but not necessarily in contact with or joined to.) Preferably, the entire outer cover 32 is liquid pervious, however, other embodiments are contemplated wherein portions of the outer cover are liquid impervious or hydrophobic. Further, it has been found that the general shape of the primary absorbent member 30 can affect the absorbent characteristics of the sanitary napkin 20 as well as the overall comfort to the wearer. Generally, a compound sanitary napkin comprising a primary absorbent member 30 having a base that is wider than the apex (that portion of the primary absorbent member 30 intended to fit at least partially within the external female genitalia) will have increased effectiveness and comfort.

As shown in FIGS. 3 and 3A, the primary absorbent member 30 has a vertical centerline 200, a base 10 having a width B and an apex 15 vertically opposed to the base 10, the apex having a width A. (The widths A and B of the apex 15 and the base 10, respectively, of a preferred compound sanitary napkin are best shown in FIG. 3A.) As used herein, the term "base" refers to that portion of the primary absorbent member 30 having the greatest width B which is juxtaposed the body facing surface 87 of the secondary absorbent member 50. (The "width" at any given location is determined by measuring the lateral or transverse dimension at that location. Thus, a measurement is taken generally perpendicular to the vertical centerline 200 and generally parallel to the transverse centerline T.) The base 10 is not limited to any particular shape or width, so long as the base 10 has a width B which is greater than the apex 15 width A. At least a portion of the base 10 is preferably joined with, or in face-to-face contact with the body facing surface 87 of the secondary absorbent member 50. (As used herein, the term "joined" encompasses configurations whereby an element is directly secured to another element by affixing the element to the other element, as well as configurations whereby an element is indirectly secured to another element by affixing the element to an intermediate member or members which in turn are affixed to the other element.)

The apex 15 is that portion of the primary absorbent member 30 which is vertically opposed to the base 10 and the secondary absorbent member 50. The apex 15 may be any shape and may have any width A less than the width B of the base 10. Preferably, the apex 15 is shaped and sized to comfortably reside at least partially within the external female genitalia. Thus, as shown in FIGS. 3-7, the apex 15 is preferably at least partially curved, rounded or otherwise shaped to conform to the wearer's body. Other embodiments, however, are contemplated wherein the apex 15 is flat, pointed or generally non-curvilinear.

Preferably, the outer cover 32 is compliant, soft feeling, and non-irritating to the wearer's skin. Further, as stated above, at least a portion of the outer cover 32 is liquid pervious, permitting liquid to readily penetrate through its thickness. A suitable outer cover 32 may be manufactured from a wide range of materials such as woven and nonwoven materials; polymeric materials such as apertured formed thermoplastic films, apertured plastic films, and hydroformed thermoplastic films; porous foams; reticulated foams; reticulated thermoplastic films; and thermoplastic scrim. Suitable woven and nonwoven materials can be comprised of natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polymeric fibers such as polyester, polypropylene, or polyethylene fibers); or from a combination of natural and synthetic fibers.

The outer cover 32 may be a unitary member or may be comprised of two or more elements joined together to form the outer cover 32. Further, the any portion of the materials comprising the outer cover 32 may be coated, laminated, treated or otherwise manipulated to impart or enhance any desired characteristics such as strength, flexibility, liquid perviousness or imperviousness.

A preferred outer cover 32 comprises formed film having apertures. Apertured formed films are preferred for the outer cover 32 because they are generally pervious to body exudates and yet non-absorbent, thus reducing the likelihood of liquids passing back through the film and rewetting the wearer's skin. Accordingly, the surface of the formed film which is in contact with the body remains dry, thereby reducing body soiling and creating a more comfortable feel for the wearer. Further formed films are easily manufactured with non-apertured portions that provide liquid impervious areas that prevent any fluids from passing therethrough. Suitable formed films are described in U.S. Pat. No. 3,929,135, issued to Thompson on December 30, 1975; U.S. Pat. No. 4,324,246, issued to Mullane, et al. on April 13, 1982; U.S. Pat. No. 4,342,314, issued to Radel, et al. on August 3, 1982; U.S. Pat. No. 4,463,045, issued to Ahr, et al. on July 31, 1984; and U.S. Pat. No. 5,006,394, issued to Baird on April 9, 1991. Each of these patents are incorporated herein by reference. One especially preferred outer cover 32 for the primary absorbent member 30 of the present invention comprises a formed film described in one or more of the above patents and marketed on sanitary napkins by The Procter & Gamble Company of Cincinnati, Ohio as "DRI-WEAVE".

In a preferred embodiment of the present invention, the body facing surface of at least a portion of the outer cover 32 is hydrophilic so as to help liquid transfer through the outer cover 32 faster than if the body facing surface was not hydrophilic.

This diminishes the likelihood that menstrual fluid will flow off the outer cover 32 rather than flowing into and being absorbed by the absorbent core 34. In a preferred embodiment, surfactant is incorporated into the polymeric materials of the formed film such as is described in U.S. Patent Application Serial No. 08/072,660, entitled "Absorbent Article Having a Nonwoven and Apertured Film Coversheet" filed on June 4, 1993 by Aziz, et al., which is incorporated herein by reference. Alternatively, the body facing surface of the outer cover 32 can be made hydrophilic by treating it with a surfactant such as described in U.S. Pat. No. 4,950,264 issued to Osborn on August 21, 1990 and which is incorporated herein by reference.

As stated above, the outer cover 32 is preferably superimposed on the absorbent core 34. To insure proper fluid transfer between the outer cover 32 and the absorbent core 34 it is preferred that the outer cover be substantially continuously joined to the underlying absorbent core 34 throughout their common association or interface. By substantially continuously joining the outer cover 32 to the underlying absorbent core 34 the outer cover 32 will have a reduced tendency to separate from the absorbent core 34 during use. Separation of the absorbent core from the outer cover 32 may inhibit fluid transfer from the outer cover 32 into the underlying absorbent core 34. The outer cover 32 may be joined to the absorbent core 34 by any suitable means, including, but not limited to joining the outer cover 32 with the absorbent core 34 with adhesives such as by spray-gluing or applying lines or spots of adhesives between the outer cover 32 and the absorbent core 34. Alternatively, or additionally, the outer cover 32 may be joined with the absorbent core 34 simply by wrapping the outer cover 32 about the absorbent core 34, by entangling the fibers of the absorbent core 34 with the outer cover 32, by fusing the outer cover 32 to the absorbent core 34 with a plurality of discrete individual fusion bonds, or by any other means known in the art.

Referring now to FIG. 3, it can be seen that outer cover 32 completely wraps the absorbent core 34 of the primary absorbent member 30. The outer cover 32 is shown in FIG. 3 to have a seam 85 adjacent the secondary absorbent member 50. Although such a configuration is advantageous to keep the seam 85 away from any body contact, the figure is not meant to limit the scope of the invention. Other suitable embodiments are contemplated wherein the seam 85 is disposed in any location about the absorbent core. Further, any number of seams, folds, pleats or bonds in the outer cover 32 are acceptable so long as the primary absorbent member 30 is able to function to absorb and contain bodily fluids while being comfortable to wear. The outer cover 32 of the primary absorbent member 30 is shown in FIG. 3 to

be a separate and distinct element from the topsheet 52 of the secondary absorbent member 50. In such embodiments, the outer cover 32 is preferably joined to the topsheet 52 of the secondary absorbent member 50 by union means 70.

5 In another embodiment, as shown in FIG. 4, the outer cover 32 does not completely encircle the absorbent core 34 of the primary absorbent member 30. Rather, the outer cover 32 substantially encircles the absorbent core 34. (As used herein, the term "substantially encircle" means that the outer cover overlays more than half of the absorbent core, and more preferably most of the absorbent core.) Because the outer cover 32 does not completely encircle the absorbent core 34, a
10 channel 80 is formed. The channel 80 provides a means for any liquid not retained by the primary absorbent member 30 to be deposited onto the topsheet 52, the absorbent element 56 or any other element of the secondary absorbent member 50 such that it may be absorbed and contained therein. (An alternative embodiment of the present invention comprising a channel 80 is shown in FIG. 5.)

15 Optionally, as shown in FIG. 5, the outer cover 32 of the primary absorbent member 30 and the topsheet 52 of the secondary absorbent member 50 may comprise a single web of material, such as web 100. In such embodiments web 100 substantially encircles the absorbent core 34 of the primary absorbent member 30 and extends outwardly therefrom to cover at least a portion of the secondary absorbent
20 member 50. Suitable materials for use as the web 100 are described above with regard to the outer cover 32 of the primary absorbent member and the topsheet 52 of the secondary absorbent member 50.

Although the web 100, as shown in FIG. 5 may cover the entire body facing surface of the second absorbent member 50, it need not do so. Further, the exact
25 configuration of the web 100 may vary so long as it substantially encircles the absorbent core 34 of the primary absorbent member 30. Thus, the web 100 may completely wrap the core 34 or may form the channel 80, as shown in FIG. 5.

In the embodiment of FIG. 5 the web 100 serves as a union means connecting the primary absorbent member 30 and the secondary absorbent member together.
30 The compound sanitary napkin may also include additional union means to connect the primary absorbent member 30 to the secondary absorbent member. Suitable additional union means include but are not limited to adhesives, fusion bonds or any other union means as described herein.

The absorbent core 34 of the present invention primarily functions to absorb
35 and contain body exudates. However, in some preferred embodiments, the absorbent core 34 functions as a shaping member to maintain the shape of the primary

absorbent member 30. Thus, the absorbent core 34 may be any absorbent means which is generally compressible, conformable, resilient, non-irritating to the wearer's skin and capable of absorbing and containing body exudates. Preferably, the total absorbent capacity of the absorbent core 34 should be compatible with the intended exudate loading for the primary absorbent member 30 of the compound sanitary napkin 20. Further, the absorbent capacity of the absorbent core 34 may be varied to accommodate wearers ranging in the expected amount of exudate fluid volume. For instance, a different absorbent capacity may be utilized for compound sanitary napkins intended for day time use as compared with those intended for night time use, or for compound sanitary napkins intended for use by teenage females as compared with those intended by more mature women.

The absorbent core 34 may be manufactured from a wide variety of liquid absorbent materials commonly used in disposable sanitary napkins, and other disposable absorbent articles. Examples of suitable absorbent materials include comminuted wood pulp, which is generally referred to as airfelt; creped cellulose wadding, modified cross-linked cellulose fibers such as those described in U.S. Patent No. 5,217,445 issued to Young, et al. on June 8, 1993; capillary channel fibers (fibers having intra-fiber capillary channels such as those described in U.S. Patent No. 5,200,248 issued to Thompson, et al. on April 6, 1993); absorbent foams such as those described in U.S. Patent No. 5,260,345, issued to DesMarais, et al. on November 9, 1993; U.S. Patent No. 5,268,244 issued to DesMarais, et al. on December 7, 1993; U.S. Patent No. 5,331,015 issued to DesMarais et al., on July 19, 1994; and U.S. Patent No. 5,387,207 issued to Dyer et al., on February 7, 1995); thermally bonded airlay materials such as those material described in U.S. Patent Application Serial No. 08/141,156, entitled "Catamenial Absorbent Structures Having Thermally Bonded Layers For Improved Handling of Menstrual Fluids and Their Use In Catamenial Pads Having Improved Fit and Comfort" filed in the name of Richards, et al. on October 21, 1993 (P&G Case 5051); polyurethane, absorbent sponges; synthetic staple fibers; polymeric fibers; hydrogel-forming polymer gelling agents; peat moss; glass fibers or any equivalent materials or combinations of materials. All of the above-identified Patents and patent applications are hereby incorporated by reference herein.

Suitable absorbent cores comprising foams are described in U.S. Pat. No. 5,260,345 issued November 9, 1993; U.S. Pat. No. 5,147,345 issued September 15, 1992; and U.S. Pat. No. 5,149,720 issued September 22, 1992. The first and third patents listed in the names of DesMarais, et al., and the second patent issued in the

name of Young, et al. Additional cores comprising foams are described in European Application 0 293 208 B1. Absorbent cores comprising sponges are described in U.S. Pat. Nos. 3,512,530; and 3,954,493; and French Patent 2,203,827. Examples of alternative suitable absorbent cores are described in detail in co-pending U.S. Patent Application Serial No. 08/277,733 (P&G Case 5395). All of the above-identified references are hereby incorporated by reference herein. Another suitable absorbent core comprises polyurethane foam available from Foamex under the trade designation Foamex 08-8982.

Materials selected for use as the absorbent core 34 are preferably compliant, soft, comfortable, compressible and resilient to enhance body fit and comfort of the primary absorbent member 30. Preferably, the absorbent core 34 is compressible such that the primary absorbent member 30 will deform under relatively small forces that are experienced during normal use. In addition to being compressible, the materials comprising the absorbent core are preferably conformable such that the primary absorbent member 30 is able to provide improved fit into and around the labia and perineum. While being generally compressible and conformable under relatively small forces, those forces exerted by the external female genitalia during use, it is also important that the primary absorbent member 30 be sufficiently resilient such that when subjected to normal wearing forces it does not permanently collapse. In some preferred embodiments, the absorbent core 34 will provide the primary absorbent member 30 with the desired resilient characteristics. In other preferred embodiments, a separate resilient member, as further discussed below, will provide the primary absorbent member 30 with the desired resilient characteristics such that the primary absorbent member 30 conforms to the contours of the body to provide intimate contact with the exposed genitalia of the female user. Intimate contact with the exposed female genitalia helps provide better fluid transfer from the user into the primary absorbent member 30 without allowing fluid to bypass and/or run-off the primary absorbent member 30. While the resilient characteristics of the absorbent core 34 allow for improved fit, they must be balanced against the need for the product to be both soft and comfortable for the wearer.

As shown in FIGS. 3 and 5, preferred embodiments of the present invention comprise absorbent cores 34 having a core member 36 of generally triangular cross-section. In this embodiment, the core member 36 is preferably resilient so as to help maintain the desired shape of the primary absorbent member 30. The core member 36 or members are preferably elongate, having a dimension in the direction of the length of the sanitary napkin 20. (In FIG. 5, the absorbent core 34 is a single core

member 36 of somewhat "mushroom" cross-section.) This core configuration provides the primary absorbent member 30 with a base 10 having a width B wider than the width A of the apex 15. However, the absorbent core 34 may comprise a wide variety of shapes such as rectangular, oval, trapezoidal, pentagonal, U-shaped, Z-folded, and still provide the primary absorbent member 30 with a base width B greater than apex width A. Examples of other preferred core configurations are shown in FIGS. 6 and 7.

In FIG. 6, the core 34 comprises a plurality of core members 36 that provide the preferred body fitting shape of the primary absorbent member 30. In one preferred embodiment, as shown in FIG. 6, the core members 36 are in the shape of elongated parallelepipeds. However, the shape, size, number and arrangement of the core members 36 may vary so long as the primary absorbent member 30 may be provided with a base width B greater than the apex width A. Further, the core members 36 may comprise any material as described herein with regard to the absorbent core, the absorbent layer, the acquisition layer or any other absorbent material as is known in the art. Examples of preferred materials for use in the core members are the absorbent foams described in U.S. Patent No. 5,260,345, issued to DesMarais, et al. on November 9, 1993; U.S. Patent No. 5,268,244 issued to DesMarais, et al. on December 7, 1993; U.S. Patent No. 5,331,015 issued to DesMarais et al., on July 19, 1994; and U.S. Patent No. 5,387,207 issued to Dyer et al., on February 7, 1995.

In a preferred embodiment, the core members 36 are wrapped in a containment layer 35. The containment layer 35 may comprise any material that will absorb and contain fluids, including, but not limited to those described herein with respect to absorbent cores and acquisition layers. An especially preferred containment layer 35 comprises thermally bonded air laid, as described above, and in U.S. Patent Application Serial No. 08/141,156. Further, each core member 36 and containment layer 35 is preferably wrapped in an acquisition layer 46. The acquisition layer 46 may comprise any of the materials as further described hereinbelow with regard to acquisition layers. A particularly preferred acquisition layer 46 comprises a nonwoven web, such as the nonwoven web available from Fiberweb North America under the trade designation P-9. As shown in FIG. 6, the outer cover 32 is superimposed over the arrangement of core members 36 to form the primary absorbent member 30 of the present invention. Examples of other suitable core member materials, shapes, sizes and arrangements are described in further detail in U.S. Patents 4,340,058 entitled "Sanitary Napkin" issued to Pierce et

al., on July 20, 1982 (describing elongate absorbent pads with generally circular cross-sections); and 4,490,147 entitled "Absorbent Sanitary Napkin" issued to Pierce et al., on December 25, 1984; each of which is incorporated by reference herein.

The primary absorbent member 30 may further comprise a resilient member 45 as is illustrated in FIG. 4. The primary absorbent member 30 may comprise a single resilient member 45 or a plurality of resilient members. The resilient member 45 may be absorbent, however it need not be so. Suitable materials which may be used as the resilient member 45 include, but are not limited to nylon, polypropylene, polyurethane, polyethylene, polyester, synthetic rubber, glass fibers and other synthetic materials such as formed films, or natural materials such as rubber, sponges, and the like or any suitable material which is capable of resisting collapse under normal wearing conditions of sanitary napkins during use. One preferred resilient member comprises polyurethane foam available from Foamex under the trade designation Foamex 08-8982. The resilient member 45 may be manufactured in a wide variety of shapes such as rectangular, triangular, oval, square, pentagonal, U-shaped, Z-folded or any other shape as is known in the art.

The resilient member 45 may extend throughout the entire length of the primary absorbent member 30. The resilient member 45 may only extend through a portion of the length of the primary absorbent member 30. The resilient member 45 may be positioned within the first end region 27, the central region 28, the second end region 29 or any combination of the above. For example, the resilient member 45 may be positioned in either the first end region 27 or the second end region 29 of the primary absorbent member 30, in both the first end region 27 and the second end region 29 of the primary absorbent member 30, in the central region 28 of the primary absorbent member 30, or in the central region 28 and the end regions 27 and 29 of the primary absorbent member 30. The resiliency of the resilient member 45 is preferably not affected by the presence of body exudates absorbed by and contained within the absorbent core. The sustained resiliency of the resilient member 45 permits the primary absorbent member 30 to maintain intimate contact with the body of the wearer during use. The primary absorbent member 30 may include a resilient member 45 similar to the internal shaping component disclosed in U.S. Patent Application Serial No. 08/225,441, (P&G Case 5109R), entitled "Sanitary Napkin having an Internal Shaping Component", filed April 8, 1994, in the name of Carl L. Bergman. The disclosure of the above referenced application is incorporated herein by reference.

FIG. 7 shows an alternative embodiment of the compound sanitary napkin 20 comprising a primary absorbent member 30 including a resilient member 45 having a generally sinusoidal cross-section, the core member preferably being elongate. (Although the resilient member 45 having sinusoidal cross-section is a preferred embodiment, a core member of any shape, cross-section or combination of shapes and/or cross-sections would suffice so long as the primary absorbent member 30 could be provided with the base width greater than the apex width. Some nonlimiting examples of shapes and cross-sections include, but are not limited to cylinders, cubes, spheres, circles, rectangles, squares, arcs, angles, curves, z-folds, etc.) As shown, the curved resilient member 45 provides support for the apex 15 of the primary absorbent member 30 as well as lateral spacing at the base 10. The resilient member 45 may comprise any of the above-described absorbent materials. An especially preferred resilient material is the polyurethane foam available from Foamex under the trade designation Foamex 08-8982. As shown in FIG. 7, the absorbent core 34 preferably comprises a containment layer 35 and an acquisition layer 46. Preferred containment layers and acquisition layers are described in greater detail above with regard to the embodiment depicted in FIG. 6.

The primary absorbent member 30 may comprise an acquisition layer 46, as shown in FIG. 4, positioned between the outer cover 32 and the absorbent core 34. The acquisition layer 46 may serve several functions including improving wicking of exudates over and into the absorbent core 34. By improving the wicking of exudates, the acquisition layer 46 provides a more even distribution of the exudates throughout the absorbent core 34. The acquisition layer 46 may be comprised of several different materials including nonwoven or woven webs of synthetic fibers including polyester, polypropylene, or polyethylene; natural fibers including cotton or cellulose; blends of such fibers; or any equivalent materials or combinations of materials. Examples of sanitary napkins having an acquisition layer are more fully described in U.S. Pat. No. 4,950,264 issued to Osborn and U.S. Pat. Application Serial No. 07/944,764, "Absorbent Article Having Fused Layers", filed October 7, 1992 in the names of Cree, et al. Each of these references is incorporated herein by reference. In a preferred embodiment, the acquisition layer 46 may be joined with the outer cover 32 by any of the conventional means for joining webs together, most preferably by fusion bonds as is more fully described in the above-referenced Cree application.

While the primary absorbent member 30 can be generally of any cross-sectional shape in its unstressed condition it is preferably triangular in cross-

section such that the base 10 has a width B greater than the width A of the apex 15. The length 40 and the width 41 of the primary absorbent member 30 can be of any convenient dimension. The primary absorbent member 30, is preferably from about 2 to 35 cm long, more preferably from about 10 to 35 cm long, and most preferably from about 20 to 35 cm long. A particularly preferred primary absorbent member 30 has a length of about 24 cm. The primary absorbent member 30, is preferably from about 0.5 to 5 cm wide, more preferably from about 0.5 to about 4 cm wide, and most preferably from about 0.5 to about 3 cm wide.

It may be desirable to provide a compound sanitary napkin having a primary absorbent member with varying degrees of width or caliper throughout its length. For example, the primary absorbent member may be relatively thicker in the central region 28 as opposed to the end regions 27 and 29. Alternatively, the primary absorbent member may be relatively thinner in the central region 28 as opposed to the end regions 27 and 29.

The second constituent of the compound sanitary napkin 20 of the present invention is the secondary absorbent member 50. The secondary absorbent member can be of generally rectangular shape. However, other suitable shapes include but are not limited to oval, hourglass, dog-bone, asymmetric and other shapes that are known in the art. Further, the secondary absorbent member 50 of the present invention is preferably relatively thin and flexible. The secondary absorbent member 50 preferably has a caliper of less than about 3.0 millimeters, more preferably less than about 2.6 millimeters, even more preferably less than about 2.2 millimeters, and most preferably less than about 2.0 millimeters.

The secondary absorbent member 50 preferably comprises an absorbent element 56 and a liquid impervious backsheet 54 joined with the absorbent element 56. As shown in FIG. 3, the absorbent element 56 may form the body contacting surface 87 of the secondary absorbent member 50. In other preferred embodiments, as shown in FIGS. 4 and 5, the secondary absorbent member 50 comprises a liquid impervious backsheet 54, a liquid pervious topsheet 52 joined with the backsheet 54 and an absorbent element 56 positioned between the topsheet 52 and the backsheet 54. In yet other embodiments, as shown in FIG. 6, the secondary absorbent member 50 may comprise an acquisition layer 88 in addition to or in place of the topsheet 52.

The topsheet 52 can be any fluid pervious material commonly used in sanitary napkins, disposable diapers, and the like. The topsheet 52 can be any of the materials described above as being useful in the outer cover 32 of the primary absorbent member 30, including, but not limited to nonwovens and apertured formed films.

The acquisition layer 88 of the secondary absorbent member 50 may comprise any of the materials described above with regard to the primary absorbent member's 30 acquisition layer 46. In preferred embodiments, the secondary absorbent member 50 comprises an acquisition layer 88 disposed between the topsheet 52 and the absorbent element 56 as shown in FIG. 6. However, embodiments are contemplated wherein the acquisition layer 88 replaces the topsheet 52, the absorbent element 56 or both. In such configurations, the acquisition layer 88 provides any absorption characteristics desired in the secondary absorbent member 50.

The absorbent element 56 of the secondary absorbent member 50 primarily functions to protect the user's garments from soiling by absorbed fluids which may be expelled from the primary absorbent member 30 or which may inadvertently bypass the primary absorbent member 30. Thus, the absorbent element 56 of the secondary absorbent member 50 generally performs a different function from that of the absorbent core 34 and is preferably somewhat thinner and less bulky than the absorbent core 34. The absorbent element 56 may comprise any of the materials described above as being useful in the absorbent core 34 or the acquisition layers 46 and 88. However, paper tissue (either single or multiple plies) is also suitable for use in the absorbent element 56. In one preferred embodiment, the absorbent element 56 is formed of from about 1 to about 5 plies of paper tissue.

Paper tissue comprising one or more plies having a basis weight of from about 24 to about 48 grams per square meter and an apparent density of from about 0.10 to about 0.12 grams per cubic centimeter as made by the process described in U.S. Pat. No. 3,301,746 issued to Sanford and Sisson on Jan. 31, 1967 and which patent is hereby incorporated herein by reference has been found to be quite satisfactory for use as the absorbent element 56. Paper tissue made by the process described in U.S. Pat. No. 3,994,771 issued to Morgan et al. on Nov. 30, 1976, and which patent is hereby incorporated herein by reference, can also be used to good advantage as the absorbent element 56. Wet strength resins and latex binders can be, and preferably are, used to provide additional strength to the paper tissue used in the absorbent element 56.

The backsheet 54 of the secondary absorbent member 50 is preferably impervious to liquids (e.g., menses and/or urine) and is preferably manufactured from a thin plastic film, although other flexible liquid impervious materials may also be used. As used herein, the term "flexible" refers to materials which are compliant and will readily conform to the general shape and contours of the human body. In use, the backsheet 54 is interposed between the absorbent element 56 and the user's

undergarments. The function of the backsheet 54 is to prevent exudates which may be expelled from or which inadvertently bypass the primary absorbent element and exudates absorbed and contained in the absorbent element 56 from contacting and soiling the user's undergarments. The backsheet 54 may thus comprise a woven or
5 nonwoven material, polymeric films such as thermoplastic films of polyethylene or polypropylene, or composite materials such as a film-coated nonwoven material. Preferably, the backsheet is a polyethylene film having a thickness of from about 0.012 mm (0.5 mil) to about 0.015 mm (2.0 mil). Exemplary polyethylene films are manufactured by Clopay Corporation of Cincinnati, Ohio under the designation P18-
10 0401 and by Ethyl Corporation, Visqueen Division, of Terre Haute, Indiana, under the designation XP-39385. A suitable extensible backsheet is an extended adhesive film known as Formula #198-388 manufactured by the Findley Adhesives Company of Wauwatosa, Wisconsin. The backsheet is preferably embossed and/or matte finished to provide a more clothlike appearance. Further, the backsheet may permit
15 vapors to escape from the absorbent element 56 (i.e., breathable) while still preventing exudates from passing through the backsheet.

In preferred embodiments, the secondary absorbent member 50 is provided with a support means or attachment means, such as adhesive attachment means 58. The adhesive attachment means 58 provides a means for securing the compound
20 sanitary napkin 20 in the crotch portion of the user's undergarment or panty. Thus, a portion or all of the outer or garment surface 55 of the backsheet 54 is coated with adhesive. In a preferred embodiment, at least a portion of the adhesive 58 is positioned on the garment surface 55 of the backsheet 54 adjacent the longitudinal side edges 21 of the secondary absorbent member 50. Any adhesive or glue used in
25 the art for such purposes can be used for the adhesive herein, with pressure-sensitive adhesives being preferred. Suitable adhesives are Century A-305-IV manufactured by the Century Adhesives Corporation of Columbus, Ohio; and Instant Lock 34-2823 manufactured by the National Starch and Chemical Company of Bridgewater, NJ. Suitable adhesive fasteners are also described in U.S. Pat. No. 4,917,697.

30 The pressure-sensitive adhesive is typically covered with a removable release liner 59 in order to keep the adhesive from drying out or adhering to a surface other than the crotch portion of the panty prior to use. Suitable release liners are also described in the above referenced U.S. Pat. No. 4,917,697. Any commercially available release liners commonly used for such purposes can be utilized herein.
35 Non-limiting examples of suitable release liners are BL30MG-A Silox E1/0 and BL30MG-A Silox 4P/0 both of which are manufactured by the Akrosil Corporation

of Menasha, WI. The compound sanitary napkin 20 of the present invention is used by removing the release liner 50 and thereafter placing the sanitary napkin in a panty so that the adhesive 58 contacts the panty. The adhesive 58 maintains the sanitary napkin in its position within the panty during use.

5 The secondary absorbent member 50 may also have flaps which extend laterally from the side edge of the absorbent core 34. A number of sanitary napkins having flaps suitable or adaptable for use with the secondary absorbent member 50 of the compound sanitary napkin 20 of the present invention are disclosed in U.S. Pat. No. 4,687,478 issued to Van Tilburg on Aug. 18, 1987; U.S. Pat. No. 4,589,876
10 issued to Van Tilburg on May 20, 1986; and U.S. Pat. No. 4,608,047 issued to Mattingly on Aug. 26, 1986. Each of these patents are incorporated herein by reference.

 Optionally, the secondary absorbent member may comprise components that naturally wrap the sides of a wearer's panties. A sanitary napkin having components
15 that naturally wrap the sides of a wearer's panties suitable for use with the secondary absorbent member of the compound sanitary napkin 20 of the present invention are disclosed in U.S. Patent Application Serial No. 08/096,121, (P&G Case 4961) entitled "Absorbent Article having Panty Covering Components that Naturally Wrap the Sides of Panties", filed July 22, 1993, in the names of Lavash, et al and U.S.
20 Patent Application Serial No. 08/277,733 (P&G Case 5354) entitled "Absorbent Articles Having Undergarment Covering Components with Zones of Extensibility", filed July 20, 1994, in the names of Weinberger, et al. The disclosures of the preceding publications are incorporated herein by reference.

 Referring now to FIG. 1, the secondary absorbent member 50 preferably has
25 a length 60 and a width 61. The secondary absorbent member 50 is preferably from about 20 to 40 cm long, more preferably from about 25 to 35 cm long, and most preferably is about 30 cm long. The secondary absorbent member 50 is preferably from about 5 to 15 cm in width, more preferably from about 5 to 10 cm in width, and most preferably from about 5 to 8 cm in width. The thickness of the secondary
30 absorbent member 50, as shown in cross-section in FIGS. 2 and 3, is generally somewhat less than its width.

 The individual components of the primary absorbent member 30 and the secondary absorbent member 50 may be comprised of components that are extensible (preferably, capable of stretching) particularly in the longitudinal direction when the
35 compound sanitary napkin is worn. Preferably, the compound sanitary napkin is capable of elongating in the longitudinal direction between about 15% and about

40% of its unstretched length. This extensibility provide better in-use fit, comfort, and decreased staining when the compound sanitary napkin is affixed to the wearer's undergarments. Sanitary napkins having extensible components are described in U.S. Patent Application Serial Nos. 07/915,133 and 07/915,284 both filed July 23, 1992, in the name of Osborn, et al. (PCT Publication Nos. WO 93/01785 and 93/01786, both published February 4, 1993). The disclosures of the preceding publications are incorporated herein by reference.

In one preferred embodiment the primary absorbent member 30 and the secondary absorbent member 50 share a common length 65. The common length, refers to the length that the primary absorbent member 30 and the secondary absorbent member 50 have in common. However, it is quite possible for the secondary absorbent member to be somewhat longer than the primary absorbent member and still function effectively.

Preferably, the width of the secondary absorbent member 50 is at least 1.5 times the width of the primary absorbent member 30. More preferably, the width of the secondary absorbent member 50 is at least 2 times the width of said primary absorbent member 30. Most preferably, the width of the secondary absorbent member 50 is in the range from about 3 to about 8 times the width of the primary absorbent member 30.

To form the compound sanitary napkin of the present invention, the primary absorbent member 30 and the secondary absorbent member are joined by union means generally indicated as 70 in FIGS. 2 and 3. The precise nature of the union means is immaterial so long as the union means selected serves to join the primary absorbent member 30 and the secondary absorbent member 50 into the compound sanitary napkin 20 of the present invention with sufficient tenacity that the primary absorbent member 30 and the secondary absorbent member 50 are not disconnected during use. Union means such as adhesive attachment with well known hot melt and pressure sensitive adhesives are quite satisfactory. If the nature of the components selected to construct the constituents of the compound sanitary napkin 20 so permit, heat welding, ultrasonic welding, dynamic mechanical bonds or a combination of any of the above-mentioned means can be used.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

WHAT IS CLAIMED IS:

1. A compound sanitary napkin comprising a primary absorbent member and a secondary absorbent member;
said primary absorbent member including an absorbent core, an outer cover, a base having a width and an apex having a width, said base being juxtaposed
5 said secondary absorbent member and said apex being vertically opposed to said base, said base width being greater than said apex width; and
said secondary absorbent member including a liquid impervious backsheet and an absorbent element joined to said backsheet, said secondary absorbent member being joined with said primary absorbent member.
10
2. The compound sanitary napkin of Claim 1 wherein said primary absorbent member comprises an absorbent core of generally triangular cross-section.
3. The compound sanitary napkin of Claim 1 wherein said primary absorbent
15 member comprises a containment layer.
4. The compound sanitary napkin of Claim 1 wherein said primary absorbent member comprises an acquisition layer.
- 20 5. The compound sanitary napkin of Claim 1 wherein said primary absorbent member comprises a resilient member.
6. The compound sanitary napkin of Claim 5 wherein said resilient member
25 comprises a foam.
7. The compound sanitary napkin of Claim 6 wherein said resilient member comprises a polyurethane foam.
8. The compound sanitary napkin of Claim 5 wherein said resilient member is
30 wrapped in a containment layer.
9. The compound sanitary napkin of Claim 5 wherein said resilient member is wrapped in an acquisition layer.
- 35 10. The compound sanitary napkin of Claim 5 wherein said resilient member is wrapped in both an acquisition layer and a containment layer.

11. The compound sanitary napkin of Claim 1 wherein said absorbent core comprises a plurality of core members.
- 5 12. The compound sanitary napkin of Claim 11 wherein said core members comprise a foam.
13. The compound sanitary napkin of Claim 11 wherein said primary absorbent member comprises a containment layer.
- 10 14. The compound sanitary napkin of Claim 13 wherein said core members are wrapped in a containment layer.
- 15 15. The compound sanitary napkin of Claim 11 wherein said primary absorbent member comprises an acquisition layer.
16. The compound sanitary napkin of Claim 15 wherein said core members are wrapped in an acquisition layer.
- 20 17. The compound sanitary napkin of Claim 11 wherein said core members are generally in the shape of parallelepipeds.
18. The compound sanitary napkin of Claim 11 wherein said core members comprise elongate absorbent pads of generally circular cross-section.
- 25 19. A compound sanitary napkin comprising a primary absorbent member and a secondary absorbent member;
said primary absorbent member including an absorbent core comprising a plurality of core members, an outer cover, a base having a width, and an apex
30 having a width, said base being juxtaposed said secondary absorbent member and said apex being vertically opposed to said base, said base width being greater than said apex width; and
said secondary member including a liquid impervious backsheet and an absorbent element joined with said backsheet, said secondary absorbent
35 member being joined with said primary absorbent member.

20. The compound sanitary napkin of Claim 19 wherein primary absorbent member further comprises a resilient member.

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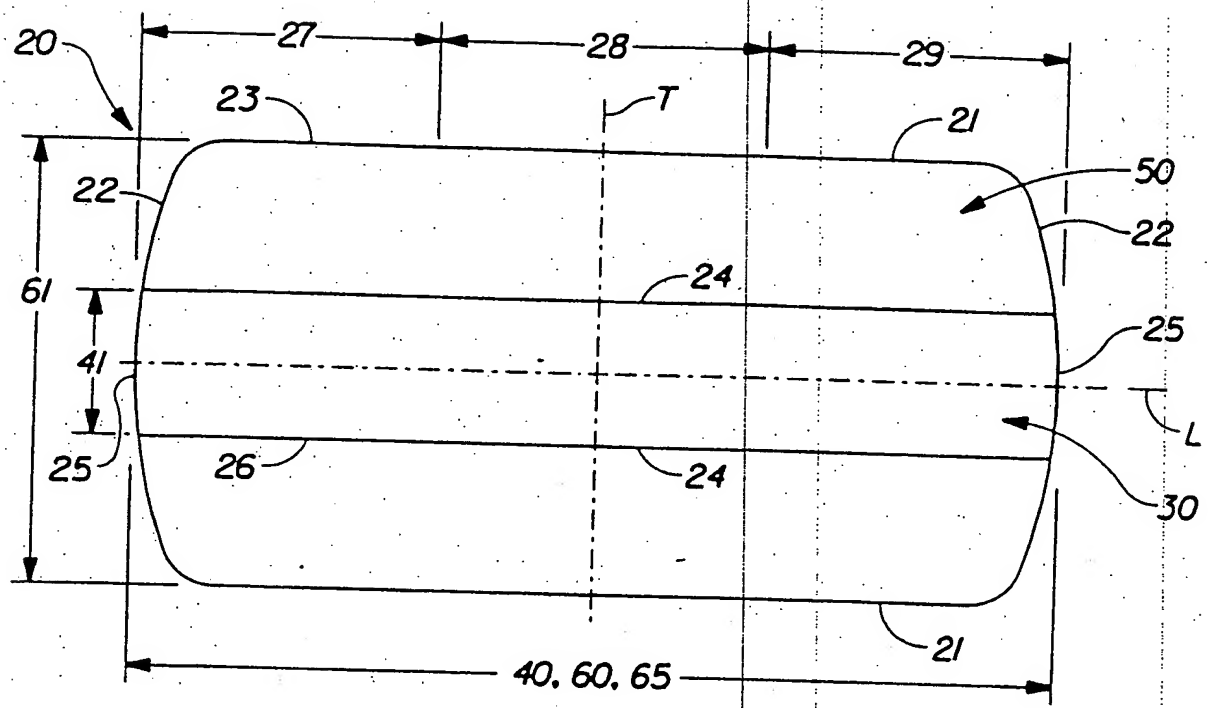


Fig. 1

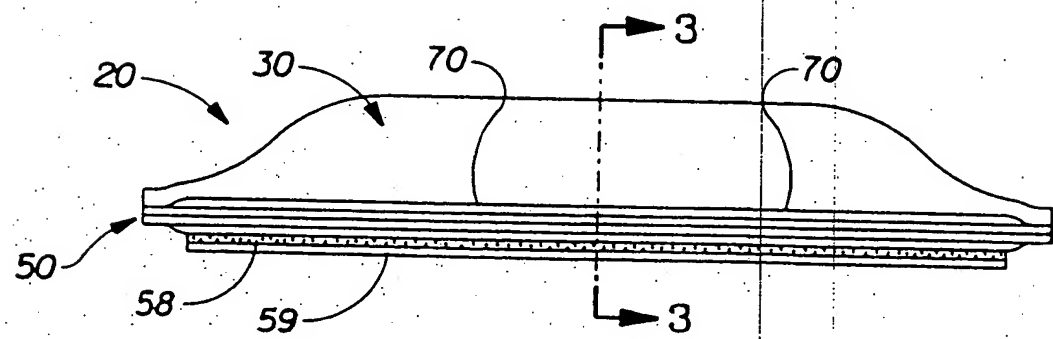


Fig. 2

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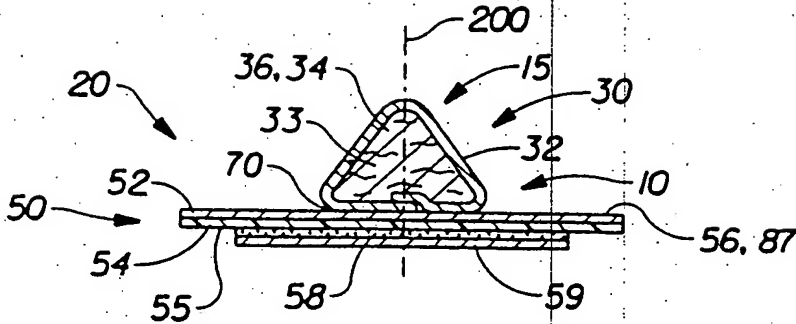


Fig. 3

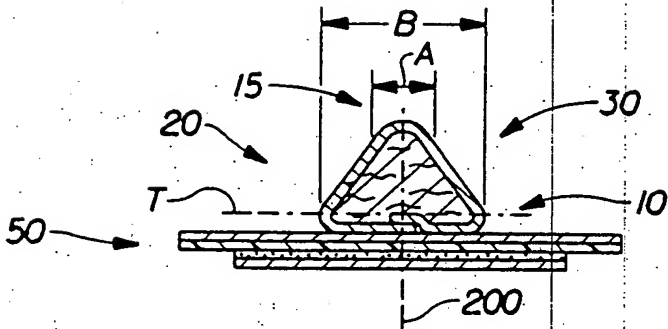


Fig. 3A

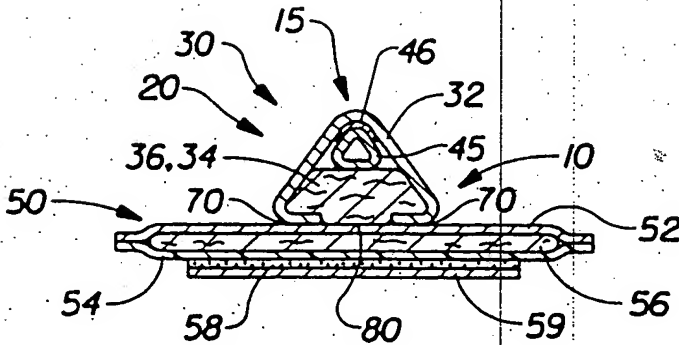


Fig. 4

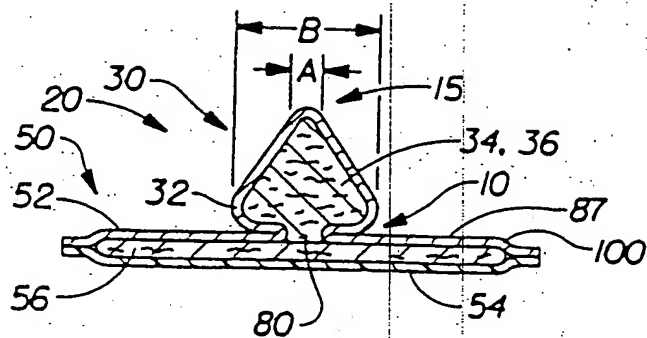


Fig. 5

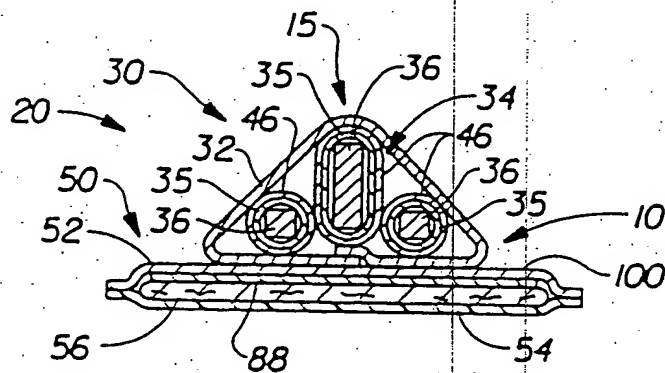


Fig. 6

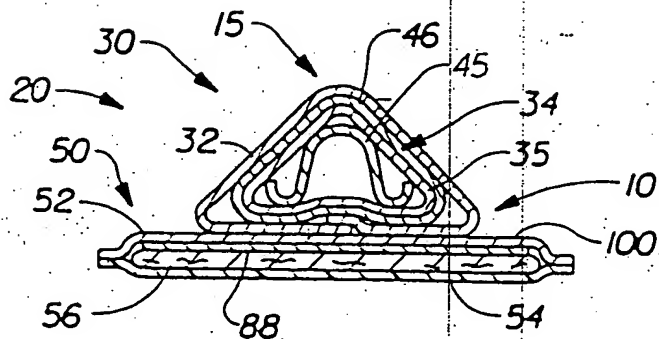


Fig. 7

ANATOMICAL COMPOUND SANITARY NAPKIN

ABSTRACT OF THE DISCLOSURE

The present invention pertains to a compound sanitary napkin. The compound sanitary napkin comprises a primary absorbent member including an absorbent core and an outer cover. The primary absorbent member has a base and an apex; the apex being vertically opposed to the base. The width of the base is greater than the width of the apex. The compound sanitary napkin further comprises a secondary absorbent member that is joined with the primary absorbent member juxtaposed the base. The secondary absorbent member preferably comprises a liquid impervious backsheet and an absorbent material joined thereto. Optionally, the secondary absorbent member includes a backsheet, a topsheet joined to the backsheet and an absorbent core disposed between the backsheet and the topsheet.

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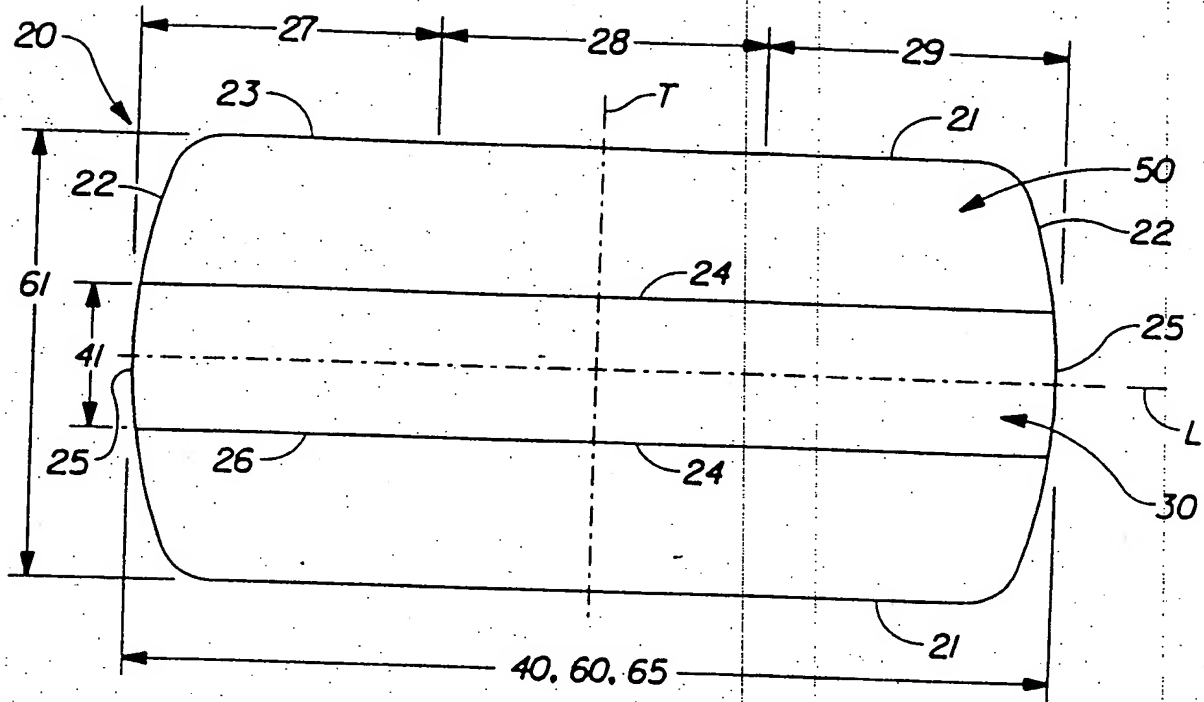


Fig. 1

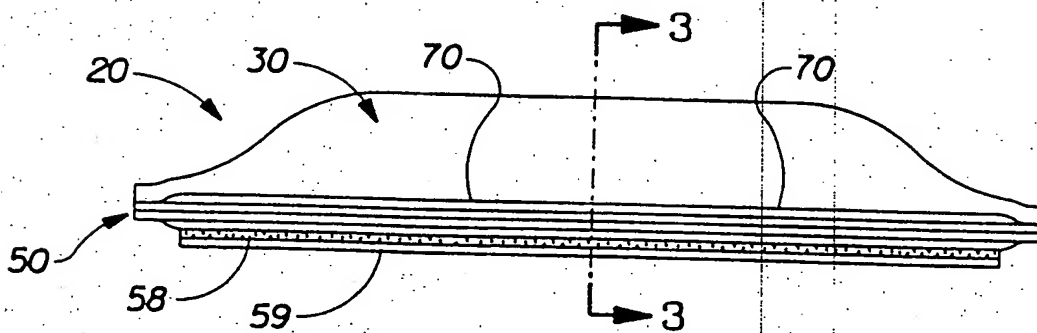


Fig. 2

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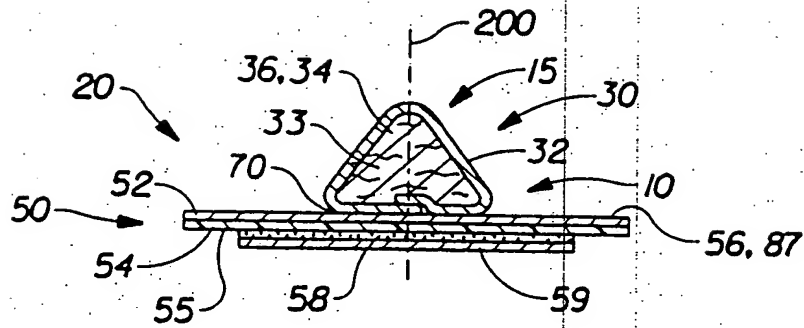


Fig. 3

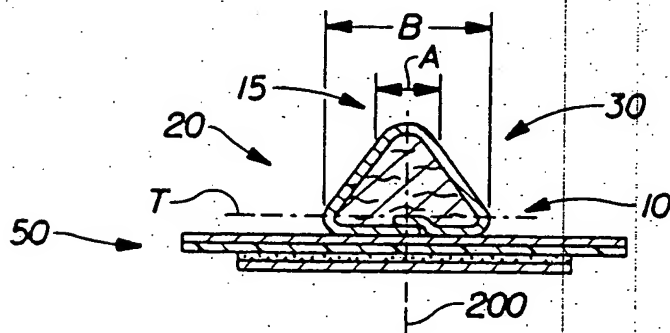


Fig. 3A

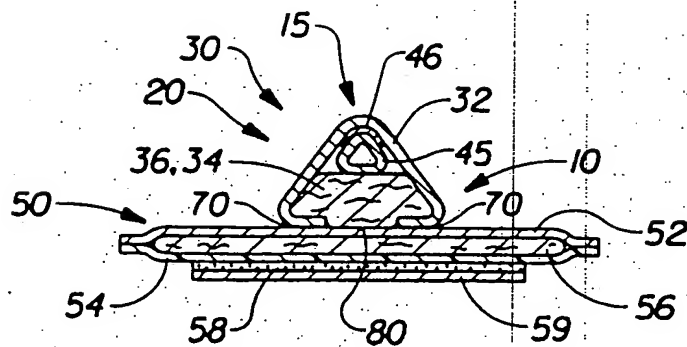


Fig. 4

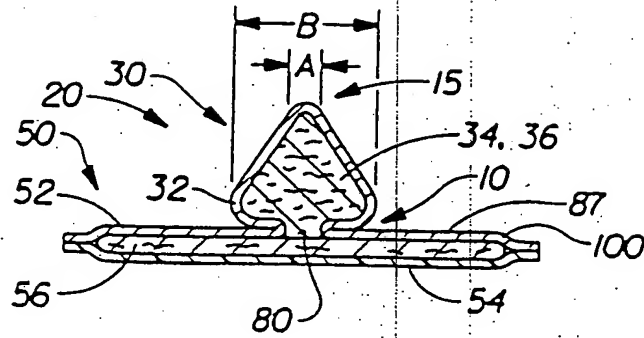


Fig. 5

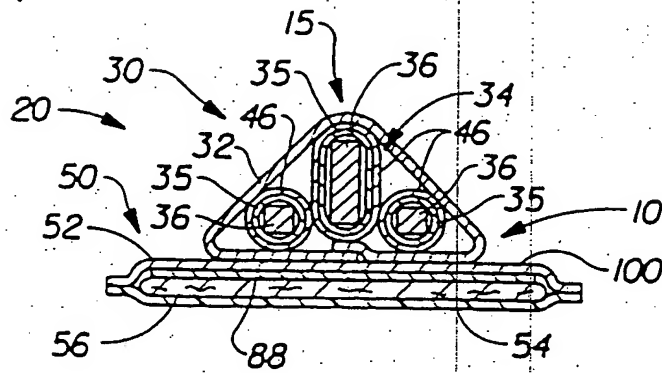


Fig. 6

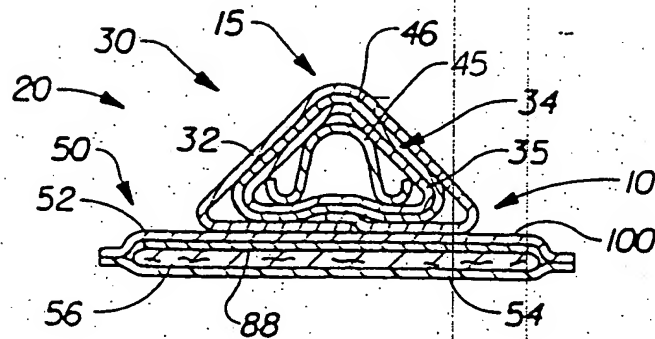


Fig. 7

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ANATOMICAL COMPOUND SANITARY NAPKIN

FIELD OF THE INVENTION

The present invention relates to disposable sanitary napkins. As used herein, sanitary napkins are considered to be absorbent devices designed to be worn externally of the body by women, usually during their menstrual periods, and to receive and contain menses and other vaginal discharges. Disposable sanitary napkins are intended to be discarded after use and soiling rather than being cleaned and reused.

BACKGROUND OF THE INVENTION

In their simplest form, disposable sanitary napkins comprise an absorbent element (sometimes referred to as an absorbent core) interposed between a liquid pervious body-contacting element (sometimes referred to as a topsheet or an overwrap) and a liquid impervious protective barrier (sometimes referred to as a backsheet). The absorbent element is intended to receive and contain menses and other vaginal discharges. The body-contacting element is intended to provide more or less comfortable and dry-feeling contact with body surfaces while allowing free passage of fluids therethrough into the absorbent element. The protective barrier is intended to prevent menses or other vaginal discharges which are expelled or which escape from the absorbent element from soiling the user's garments.

In addition to the three functional elements mentioned above, disposable sanitary napkins are generally provided with means for supporting the device adjacent the user's crotch area, even as the user moves, where it can most effectively perform its intended function. Typically, sanitary napkins are provided with an adhesive attachment means for securing the device to the inner crotch area of the user's undergarments.

While previously known sanitary napkins do perform their intended function, each conventional design suffers from certain deficiencies in one or more of absorbency of body fluids, protection of the user's garments from soiling, and/or physical comfort to the user.

With respect to disposable sanitary napkins, at least two general classes presently exist. One such class is identified as being intended for the absorption of medium to high menstrual flows. These sanitary napkins offer a relatively high absorptive capacity. Absorptive capacity is commonly achieved by providing the

sanitary napkin with a relatively thick and bulky absorbent member. While having a relatively high absorptive capacity, the bulkiness of the absorbent member may cause a certain degree of wearing discomfort.

5 A second class of sanitary napkins are intended for light or low menstrual flows and are commonly referred to as pantliners or pantishields. Sanitary napkins of this class, as a group, are thinner, somewhat more flexible and generally more comfortable than those of the first class. However, sanitary napkins of the second class typically lack the absorptive capacity of sanitary napkins of the first class.

10 One attempt to provide the benefits of the previously described two classes of sanitary napkins into a single compound sanitary napkin is disclosed in commonly assigned U.S. Patent No. 4,425,130 issued to DesMarais on January 10, 1984. The compound sanitary napkin of DesMarais comprises a primary menstrual pad and a panty protector joined to one another at their corresponding ends in such a manner that the two constituents are free to move relative to one another along essentially
15 their entire common length. The primary menstrual pad is intended to absorb the bulk of the bodily fluids discharged by the user, while the panty protector is intended to protect the user's garments from soiling. In use, the relative freedom of movement between the primary menstrual pad and the panty protector serves to maintain the primary menstrual pad adjacent the user's crotch region while the panty protector remains associated with the user's undergarment. While the relative freedom of
20 movement between the primary menstrual pad and the panty protector serves to maintain the primary menstrual pad near the user's crotch region, this freedom of movement may lead to a lack of stability if the primary menstrual pad moves laterally beyond the side edges of the panty protector, providing an opportunity for soiling the
25 user's undergarment.

Furthermore, the relative freedom of movement between the primary menstrual pad and the panty protector alone may be insufficient to capture bodily fluid as it exits the wearer's vaginal opening. The primary menstrual pad is preferably narrow enough to at least reside partially within the external genitalia. Optionally,
30 the primary menstrual pad may be wider than the distance between the labia majora, but exhibits a lateral compression or conformability at relatively low forces, such as the forces exerted by the soft tissue of the female external genitalia, such that a portion of the primary menstrual pad is able to at least reside partially within the external female genitalia. By being conformable at relatively low forces, the primary
35 absorbent member remains comfortable during use. In addition, the primary

menstrual pad preferably exhibits a resilient recovery to enable the pad to conform to the body as the pad and body interface is subjected to shape changes.

As the primary menstrual pad is made narrower to fit the body, the panty protector preferably remains sufficiently wide enough to provide a stable attachment to the wearer's undergarment and to sufficiently cover the undergarment to protect it from soiling.

SUMMARY OF THE INVENTION

The present invention pertains to a compound sanitary napkin. The compound sanitary napkin comprises a primary absorbent member including an absorbent core and an outer cover. The primary absorbent member has a base and an apex; the apex being vertically opposed to the base. The width of the base is greater than the width of the apex. The compound sanitary napkin further comprises a secondary absorbent member that is joined with the primary absorbent member juxtaposed the base. The secondary absorbent member preferably comprises a liquid impervious backsheet and an absorbent material joined thereto. Optionally, the secondary absorbent member comprises a backsheet, a topsheet joined to the backsheet and an absorbent core disposed between the backsheet and the topsheet.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed that the present invention will be better understood from the following description in conjunction with the following drawings, in which like reference numbers identify identical elements and wherein:

FIG. 1 is a top plan view of one embodiment of the compound sanitary napkin of the present invention;

FIG. 2 is a side elevation view of the compound sanitary napkin shown in FIG. 1;

FIGS. 3 and 3A are cross-sectional views of the compound sanitary napkin shown in FIGS. 1 and 2 as taken along section line 3-3 of FIG. 2; and

FIGS. 4, 5, 6 and 7 are cross-sectional views of alternative embodiments of the compound sanitary napkin of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

This invention is of a body fitting compound sanitary napkin which exhibits absorbency for bodily fluids, the protection of the user's garments from soiling, and

physical comfort to the user. The term "sanitary napkin", as used herein, refers to an article which is worn by females adjacent to the pudendal region and which is intended to absorb and contain the various exudates which are discharged from the body (e.g., blood, menses, and urine) and which is intended to be discarded after a single use (i.e., it is not intended to be laundered or otherwise restored or reused). The term "compound sanitary napkin", as used herein, refers to a sanitary napkin comprised of separate constituents joined to one another to form a unitary structure. Interlabial devices which reside partially within and partially external of the wearer's vestibule are also within the scope of this invention. As used herein, the term "pudendal" refers to the externally visible female genitalia and is limited to the labia majora, the labia minora, the clitoris, and the vestibule.

FIGS. 1-3 show one preferred embodiment of a compound sanitary napkin 20 of the present invention. As can be seen in FIGS. 1-3, the compound sanitary napkin 20 comprises a primary absorbent member 30 and a secondary absorbent member 50 joined together by union means 70. The compound sanitary napkin has two surfaces, a body contacting or facing surface 87, and a garment facing or contacting surface 55. The primary and secondary absorbent members each have corresponding body facing and garment facing surfaces. The compound sanitary napkin 20 has two centerlines, a longitudinal centerline L and a transverse centerline T. The term "longitudinal", as use herein, refers to a line, axis or direction in the plane of the compound sanitary napkin that is generally aligned with (e.g., approximately parallel to) a vertical plane which bisects a standing wearer into left and right body halves when the compound sanitary napkin is worn. The terms "transverse" or "lateral", as used herein, are interchangeable, and refer, to a line, axis, or direction which lies within the plane of the compound sanitary napkin that is generally perpendicular to the longitudinal direction.

The primary absorbent member 30 has side edges 24 and end edges 25 which together form the periphery 26 of the primary absorbent member 30. The secondary absorbent member 50 has side edges 21 and end edges 22 which together form the periphery 23 of the secondary absorbent member and the compound sanitary napkin 20. The compound sanitary napkin 20 has a first end region 27, a central region 28, and a second end region 29.

The primary absorbent member 30 is that constituent of the compound sanitary napkin 20 intended to absorb the bulk of bodily fluids discharged by the user. The primary absorbent member 30 comprises an absorbent means 33, such as absorbent core 34, and an outer cover 32 superimposed on the absorbent core 34.

(As used herein, the term "superimposed" means adjacent or juxtaposed, but not necessarily in contact with or joined to.) Preferably, the entire outer cover 32 is liquid pervious, however, other embodiments are contemplated wherein portions of the outer cover are liquid impervious or hydrophobic. Further, it has been found that the general shape of the primary absorbent member 30 can affect the absorbent characteristics of the sanitary napkin 20 as well as the overall comfort to the wearer. Generally, a compound sanitary napkin comprising a primary absorbent member 30 having a base that is wider than the apex (that portion of the primary absorbent member 30 intended to fit at least partially within the external female genitalia) will have increased effectiveness and comfort.

As shown in FIGS. 3 and 3A, the primary absorbent member 30 has a vertical centerline 200, a base 10 having a width B and an apex 15 vertically opposed to the base 10, the apex having a width A. (The widths A and B of the apex 15 and the base 10, respectively, of a preferred compound sanitary napkin are best shown in FIG. 3A.) As used herein, the term "base" refers to that portion of the primary absorbent member 30 having the greatest width B which is juxtaposed the body facing surface 87 of the secondary absorbent member 50. (The "width" at any given location is determined by measuring the lateral or transverse dimension at that location. Thus, a measurement is taken generally perpendicular to the vertical centerline 200 and generally parallel to the transverse centerline T.) The base 15 is not limited to any particular shape or width, so long as the base 10 has a width B which is greater than the apex 15 width A. At least a portion of the base 10 is preferably joined with, or in face-to-face contact with the body facing surface 87 of the secondary absorbent member 50. (As used herein, the term "joined" encompasses configurations whereby an element is directly secured to another element by affixing the element to the other element, as well as configurations whereby an element is indirectly secured to another element by affixing the element to an intermediate member or members which in turn are affixed to the other element.)

The apex 15 is that portion of the primary absorbent member 30 which is vertically opposed to the base 10 and the secondary absorbent member 50. The apex 15 may be any shape and may have any width A less than the width B of the base 10. Preferably, the apex 15 is shaped and sized to comfortably reside at least partially within the external female genitalia. Thus, as shown in FIGS. 3-7, the apex 15 is preferably at least partially curved, rounded or otherwise shaped to conform to the wearer's body. Other embodiments, however, are contemplated wherein the apex 15 is flat, pointed or generally non-curvilinear.

Preferably, the outer cover 32 is compliant, soft feeling, and non-irritating to the wearer's skin. Further, as stated above, at least a portion of the outer cover 32 is liquid pervious, permitting liquid to readily penetrate through its thickness. A suitable outer cover 32 may be manufactured from a wide range of materials such as woven and nonwoven materials; polymeric materials such as apertured formed thermoplastic films, apertured plastic films, and hydroformed thermoplastic films; porous foams; reticulated foams; reticulated thermoplastic films; and thermoplastic scrim. Suitable woven and nonwoven materials can be comprised of natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polymeric fibers such as polyester, polypropylene, or polyethylene fibers); or from a combination of natural and synthetic fibers.

The outer cover 32 may be a unitary member or may be comprised of two or more elements joined together to form the outer cover 32. Further, the any portion of the materials comprising the outer cover 32 may be coated, laminated, treated or otherwise manipulated to impart or enhance any desired characteristics such as strength, flexibility, liquid perviousness or imperviousness.

A preferred outer cover 32 comprises formed film having apertures. Apertured formed films are preferred for the outer cover 32 because they are generally pervious to body exudates and yet non-absorbent, thus reducing the likelihood of liquids passing back through the film and rewetting the wearer's skin. Accordingly, the surface of the formed film which is in contact with the body remains dry, thereby reducing body soiling and creating a more comfortable feel for the wearer. Further formed films are easily manufactured with non-apertured portions that provide liquid impervious areas that prevent any fluids from passing therethrough. Suitable formed films are described in U.S. Pat. No. 3,929,135, issued to Thompson on December 30, 1975; U.S. Pat. No. 4,324,246, issued to Mullane, et al. on April 13, 1982; U.S. Pat. No. 4,342,314, issued to Radcliff, et al. on August 3, 1982; U.S. Pat. No. 4,463,045, issued to Ahr, et al. on July 31, 1984; and U.S. Pat. No. 5,006,394, issued to Baird on April 9, 1991. Each of these patents are incorporated herein by reference. One especially preferred outer cover 32 for the primary absorbent member 30 of the present invention comprises a formed film described in one or more of the above patents and marketed on sanitary napkins by The Procter & Gamble Company of Cincinnati, Ohio as "DRI-WEAVE".

In a preferred embodiment of the present invention, the body facing surface of at least a portion of the outer cover 32 is hydrophilic so as to help liquid transfer through the outer cover 32 faster than if the body facing surface was not hydrophilic.

This diminishes the likelihood that menstrual fluid will flow off the outer cover 32 rather than flowing into and being absorbed by the absorbent core 34. In a preferred embodiment, surfactant is incorporated into the polymeric materials of the formed film such as is described in U.S. Patent Application Serial No. 08/072,660, entitled "Absorbent Article Having a Nonwoven and Apertured Film Coversheet" filed on June 4, 1993 by Aziz, et al., which is incorporated herein by reference. Alternatively, the body facing surface of the outer cover 32 can be made hydrophilic by treating it with a surfactant such as described in U.S. Pat. No. 4,950,264 issued to Osborn on August 21, 1990 and which is incorporated herein by reference.

As stated above, the outer cover 32 is preferably superimposed on the absorbent core 34. To insure proper fluid transfer between the outer cover 32 and the absorbent core 34 it is preferred that the outer cover be substantially continuously joined to the underlying absorbent core 34 throughout their common association or interface. By substantially continuously joining the outer cover 32 to the underlying absorbent core 34 the outer cover 32 will have a reduced tendency to separate from the absorbent core 34 during use. Separation of the absorbent core from the outer cover 32 may inhibit fluid transfer from the outer cover 32 into the underlying absorbent core 34. The outer cover 32 may be joined to the absorbent core 34 by any suitable means, including, but not limited to joining the outer cover 32 with the absorbent core 34 with adhesives such as by spray-gluing or applying lines or spots of adhesives between the outer cover 32 and the absorbent core 34. Alternatively, or additionally, the outer cover 32 may be joined with the absorbent core 34 simply by wrapping the outer cover 32 about the absorbent core 34, by entangling the fibers of the absorbent core 34 with the outer cover 32, by fusing the outer cover 32 to the absorbent core 34 with a plurality of discrete individual fusion bonds, or by any other means known in the art.

Referring now to FIG. 3, it can be seen that outer cover 32 completely wraps the absorbent core 34 of the primary absorbent member 30. The outer cover 32 is shown in FIG. 3 to have a seam 85 adjacent the secondary absorbent member 50. Although such a configuration is advantageous to keep the seam 85 away from any body contact, the figure is not meant to limit the scope of the invention. Other suitable embodiments are contemplated wherein the seam 85 is disposed in any location about the absorbent core. Further, any number of seams, folds, pleats or bonds in the outer cover 32 are acceptable so long as the primary absorbent member 30 is able to function to absorb and contain bodily fluids while being comfortable to wear. The outer cover 32 of the primary absorbent member 30 is shown in FIG. 3 to

be a separate and distinct element from the topsheet 52 of the secondary absorbent member 50. In such embodiments, the outer cover 32 is preferably joined to the topsheet 52 of the secondary absorbent member 50 by union means 70.

5 In another embodiment, as shown in FIG. 4, the outer cover 32 does not completely encircle the absorbent core 34 of the primary absorbent member 30. Rather, the outer cover 32 substantially encircles the absorbent core 34. (As used herein, the term "substantially encircle" means that the outer cover overlays more than half of the absorbent core, and more preferably most of the absorbent core.) Because the outer cover 32 does not completely encircle the absorbent core 34, a
10 channel 80 is formed. The channel 80 provides a means for any liquid not retained by the primary absorbent member 30 to be deposited onto the topsheet 52, the absorbent element 56 or any other element of the secondary absorbent member 50 such that it may be absorbed and contained therein. (An alternative embodiment of the present invention comprising a channel 80 is shown in FIG. 5.)

15 Optionally, as shown in FIG. 5, the outer cover 32 of the primary absorbent member 30 and the topsheet 52 of the secondary absorbent member 50 may comprise a single web of material, such as web 100. In such embodiments web 100 substantially encircles the absorbent core 34 of the primary absorbent member 30 and extends outwardly therefrom to cover at least a portion of the secondary absorbent
20 member 50. Suitable materials for use as the web 100 are described above with regard to the outer cover 32 of the primary absorbent member and the topsheet 52 of the secondary absorbent member 50.

Although the web 100, as shown in FIG. 5 may cover the entire body facing surface of the second absorbent member 50, it need not do so. Further, the exact
25 configuration of the web 100 may vary so long as it substantially encircles the absorbent core 34 of the primary absorbent member 30. Thus, the web 100 may completely wrap the core 34 or may form the channel 80, as shown in FIG. 5.

In the embodiment of FIG. 5 the web 100 serves as a union means connecting the primary absorbent member 30 and the secondary absorbent member together.
30 The compound sanitary napkin may also include additional union means to connect the primary absorbent member 30 to the secondary absorbent member. Suitable additional union means include but are not limited to adhesives, fusion bonds or any other union means as described herein.

The absorbent core 34 of the present invention primarily functions to absorb
35 and contain body exudates. However, in some preferred embodiments, the absorbent core 34 functions as a shaping member to maintain the shape of the primary

absorbent member 30. Thus, the absorbent core 34 may be any absorbent means which is generally compressible, conformable, resilient, non-irritating to the wearer's skin and capable of absorbing and containing body exudates. Preferably, the total absorbent capacity of the absorbent core 34 should be compatible with the intended exudate loading for the primary absorbent member 30 of the compound sanitary napkin 20. Further, the absorbent capacity of the absorbent core 34 may be varied to accommodate wearers ranging in the expected amount of exudate fluid volume. For instance, a different absorbent capacity may be utilized for compound sanitary napkins intended for day time use as compared with those intended for night time use, or for compound sanitary napkins intended for use by teenage females as compared with those intended by more mature women.

The absorbent core 34 may be manufactured from a wide variety of liquid absorbent materials commonly used in disposable sanitary napkins, and other disposable absorbent articles. Examples of suitable absorbent materials include comminuted wood pulp, which is generally referred to as airfelt; creped cellulose wadding, modified cross-linked cellulose fibers such as those described in U.S. Patent No. 5,217,445 issued to Young, et al. on June 8, 1993; capillary channel fibers (fibers having intra-fiber capillary channels such as those described in U.S. Patent No. 5,200,248 issued to Thompson, et al. on April 6, 1993); absorbent foams such as those described in U.S. Patent No. 5,260,345, issued to DesMarais, et al. on November 9, 1993; U.S. Patent No. 5,268,244 issued to DesMarais, et al. on December 7, 1993; U.S. Patent No. 5,331,015 issued to DesMarais et al., on July 19, 1994; and U.S. Patent No. 5,387,207 issued to Dyer et al., on February 7, 1995); thermally bonded airlay materials such as those material described in U.S. Patent Application Serial No. 08/141,156, entitled "Catamenial Absorbent Structures Having Thermally Bonded Layers For Improved Handling of Menstrual Fluids and Their Use In Catamenial Pads Having Improved Fit and Comfort" filed in the name of Richards, et al. on October 21, 1993 (P&G Case 5051); polyurethane, absorbent sponges; synthetic staple fibers; polymeric fibers; hydrogel-forming polymer gelling agents; peat moss; glass fibers or any equivalent materials or combinations of materials. All of the above-identified Patents and patent applications are hereby incorporated by reference herein.

Suitable absorbent cores comprising foams are described in U.S. Pat. No. 5,260,345 issued November 9, 1993; U.S. Pat. No. 5,147,345 issued September 15, 1992; and U.S. Pat. No. 5,149,720 issued September 22, 1992. The first and third patents listed in the names of DesMarais, et al., and the second patent issued in the

name of Young, et al. Additional cores comprising foams are described in European Application 0 293 208 B1. Absorbent cores comprising sponges are described in U.S. Pat. Nos. 3,512,530; and 3,954,493; and French Patent 2,203,827. Examples of alternative suitable absorbent cores are described in detail in co-pending U.S. Patent Application Serial No. 08/277,733 (P&G Case 5395). All of the above-identified references are hereby incorporated by reference herein. Another suitable absorbent core comprises polyurethane foam available from Foamex under the trade designation Foamex 08-8982.

Materials selected for use as the absorbent core 34 are preferably compliant, soft, comfortable, compressible and resilient to enhance body fit and comfort of the primary absorbent member 30. Preferably, the absorbent core 34 is compressible such that the primary absorbent member 30 will deform under relatively small forces that are experienced during normal use. In addition to being compressible, the materials comprising the absorbent core are preferably conformable such that the primary absorbent member 30 is able to provide improved fit into and around the labia and perineum. While being generally compressible and conformable under relatively small forces, those forces exerted by the external female genitalia during use, it is also important that the primary absorbent member 30 be sufficiently resilient such that when subjected to normal wearing forces it does not permanently collapse. In some preferred embodiments, the absorbent core 34 will provide the primary absorbent member 30 with the desired resilient characteristics. In other preferred embodiments, a separate resilient member, as further discussed below, will provide the primary absorbent member 30 with the desired resilient characteristics such that the primary absorbent member 30 conforms to the contours of the body to provide intimate contact with the exposed genitalia of the female user. Intimate contact with the exposed female genitalia helps provide better fluid transfer from the user into the primary absorbent member 30 without allowing fluid to bypass and/or run-off the primary absorbent member 30. While the resilient characteristics of the absorbent core 34 allow for improved fit, they must be balanced against the need for the product to be both soft and comfortable for the wearer.

As shown in FIGS. 3 and 5, preferred embodiments of the present invention comprise absorbent cores 34 having a core member 36 of generally triangular cross-section. In this embodiment, the core member 36 is preferably resilient so as to help maintain the desired shape of the primary absorbent member 30. The core member 36 or members are preferably elongate, having a dimension in the direction of the length of the sanitary napkin 20. (In FIG. 5, the absorbent core 34 is a single core

member 36 of somewhat "mushroom" cross-section.) This core configuration provides the primary absorbent member 30 with a base 10 having a width B wider than the width A of the apex 15. However, the absorbent core 34 may comprise a wide variety of shapes such as rectangular, oval, trapezoidal, pentagonal, U-shaped, Z-folded, and still provide the primary absorbent member 30 with a base width B greater than apex width A. Examples of other preferred core configurations are shown in FIGS. 6 and 7.

In FIG. 6, the core 34 comprises a plurality of core members 36 that provide the preferred body fitting shape of the primary absorbent member 30. In one preferred embodiment, as shown in FIG. 6, the core members 36 are in the shape of elongated parallelepipeds. However, the shape, size, number and arrangement of the core members 36 may vary so long as the primary absorbent member 30 may be provided with a base width B greater than the apex width A. Further, the core members 36 may comprise any material as described herein with regard to the absorbent core, the absorbent layer, the acquisition layer or any other absorbent material as is known in the art. Examples of preferred materials for use in the core members are the absorbent foams described in U.S. Patent No. 5,260,345, issued to DesMarais, et al. on November 9, 1993; U.S. Patent No. 5,268,244 issued to DesMarais, et al. on December 7, 1993; U.S. Patent No. 5,331,015 issued to DesMarais et al., on July 19, 1994; and U.S. Patent No. 5,387,207 issued to Dyer et al., on February 7, 1995.

In a preferred embodiment, the core members 36 are wrapped in a containment layer 35. The containment layer 35 may comprise any material that will absorb and contain fluids, including, but not limited to those described herein with respect to absorbent cores and acquisition layers. An especially preferred containment layer 35 comprises thermally bonded air laid, as described above, and in U.S. Patent Application Serial No. 08/141,156. Further, each core member 36 and containment layer 35 is preferably wrapped in an acquisition layer 46. The acquisition layer 46 may comprise any of the materials as further described hereinbelow with regard to acquisition layers. A particularly preferred acquisition layer 46 comprises a nonwoven web, such as the nonwoven web available from Fiberweb North America under the trade designation P-9. As shown in FIG. 6, the outer cover 32 is superimposed over the arrangement of core members 36 to form the primary absorbent member 30 of the present invention. Examples of other suitable core member materials, shapes, sizes and arrangements are described in further detail in U.S. Patents 4,340,058 entitled "Sanitary Napkin" issued to Pierce et

al., on July 20, 1982 (describing elongate absorbent pads with generally circular cross-sections); and 4,490,147 entitled "Absorbent Sanitary Napkin" issued to Pierce et al., on December 25, 1984; each of which is incorporated by reference herein.

The primary absorbent member 30 may further comprise a resilient member 45 as is illustrated in FIG. 4. The primary absorbent member 30 may comprise a single resilient member 45 or a plurality of resilient members. The resilient member 45 may be absorbent, however it need not be so. Suitable materials which may be used as the resilient member 45 include, but are not limited to nylon, polypropylene, polyurethane, polyethylene, polyester, synthetic rubber, glass fibers and other synthetic materials such as formed films, or natural materials such as rubber, sponges, and the like or any suitable material which is capable of resisting collapse under normal wearing conditions of sanitary napkins during use. One preferred resilient member comprises polyurethane foam available from Foamex under the trade designation Foamex 08-8982. The resilient member 45 may be manufactured in a wide variety of shapes such as rectangular, triangular, oval, square, pentagonal, U-shaped, Z-folded or any other shape as is known in the art.

The resilient member 45 may extend throughout the entire length of the primary absorbent member 30. The resilient member 45 may only extend through a portion of the length of the primary absorbent member 30. The resilient member 45 may be positioned within the first end region 27, the central region 28, the second end region 29 or any combination of the above. For example, the resilient member 45 may be positioned in either the first end region 27 or the second end region 29 of the primary absorbent member 30, in both the first end region 27 and the second end region 29 of the primary absorbent member 30, in the central region 28 of the primary absorbent member 30, or in the central region 28 and the end regions 27 and 29 of the primary absorbent member 30. The resiliency of the resilient member 45 is preferably not affected by the presence of body exudates absorbed by and contained within the absorbent core. The sustained resiliency of the resilient member 45 permits the primary absorbent member 30 to maintain intimate contact with the body of the wearer during use. The primary absorbent member 30 may include a resilient member 45 similar to the internal shaping component disclosed in U.S. Patent Application Serial No. 08/225,441, (P&G Case 5109R), entitled "Sanitary Napkin having an Internal Shaping Component", filed April 8, 1994, in the name of Carl L. Bergman. The disclosure of the above referenced application is incorporated herein by reference.

FIG. 7 shows an alternative embodiment of the compound sanitary napkin 20 comprising a primary absorbent member 30 including a resilient member 45 having a generally sinusoidal cross-section, the core member preferably being elongate. (Although the resilient member 45 having sinusoidal cross-section is a preferred embodiment, a core member of any shape, cross-section or combination of shapes and/or cross-sections would suffice so long as the primary absorbent member 30 could be provided with the base width greater than the apex width. Some nonlimiting examples of shapes and cross-sections include, but are not limited to cylinders, cubes, spheres, circles, rectangles, squares, arcs, angles, curves, z-folds, etc.) As shown, the curved resilient member 45 provides support for the apex 15 of the primary absorbent member 30 as well as lateral spacing at the base 10. The resilient member 45 may comprise any of the above-described absorbent materials. An especially preferred resilient material is the polyurethane foam available from Foamex under the trade designation Foamex 08-8982. As shown in FIG. 7, the absorbent core 34 preferably comprises a containment layer 35 and an acquisition layer 46. Preferred containment layers and acquisition layers are described in greater detail above with regard to the embodiment depicted in FIG. 6.

The primary absorbent member 30 may comprise an acquisition layer 46, as shown in FIG. 4, positioned between the outer cover 32 and the absorbent core 34. The acquisition layer 46 may serve several functions including improving wicking of exudates over and into the absorbent core 34. By improving the wicking of exudates, the acquisition layer 46 provides a more even distribution of the exudates throughout the absorbent core 34. The acquisition layer 46 may be comprised of several different materials including nonwoven or woven webs of synthetic fibers including polyester, polypropylene, or polyethylene; natural fibers including cotton or cellulose; blends of such fibers; or any equivalent materials or combinations of materials. Examples of sanitary napkins having an acquisition layer are more fully described in U.S. Pat. No. 4,950,264 issued to Osborn and U.S. Pat. Application Serial No. 07/944,764, "Absorbent Article Having Fused Layers", filed October 7, 1992 in the names of Cree, et al. Each of these references is incorporated herein by reference. In a preferred embodiment, the acquisition layer 46 may be joined with the outer cover 32 by any of the conventional means for joining webs together, most preferably by fusion bonds as is more fully described in the above-referenced Cree application.

While the primary absorbent member 30 can be generally of any cross-sectional shape in its unstressed condition it is preferably triangular in cross-

section such that the base 10 has a width B greater than the width A of the apex 15. The length 40 and the width 41 of the primary absorbent member 30 can be of any convenient dimension. The primary absorbent member 30, is preferably from about 2 to 35 cm long, more preferably from about 10 to 35 cm long, and most preferably from about 20 to 35 cm long. A particularly preferred primary absorbent member 30 has a length of about 24 cm. The primary absorbent member 30, is preferably from about 0.5 to 5 cm wide, more preferably from about 0.5 to about 4 cm wide, and most preferably from about 0.5 to about 3 cm wide.

It may be desirable to provide a compound sanitary napkin having a primary absorbent member with varying degrees of width or caliper throughout its length. For example, the primary absorbent member may be relatively thicker in the central region 28 as opposed to the end regions 27 and 29. Alternatively, the primary absorbent member may be relatively thinner in the central region 28 as opposed to the end regions 27 and 29.

The second constituent of the compound sanitary napkin 20 of the present invention is the secondary absorbent member 50. The secondary absorbent member can be of generally rectangular shape. However, other suitable shapes include but are not limited to oval, hourglass, dog-bone, asymmetric and other shapes that are known in the art. Further, the secondary absorbent member 50 of the present invention is preferably relatively thin and flexible. The secondary absorbent member 50 preferably has a caliper of less than about 3.0 millimeters, more preferably less than about 2.6 millimeters, even more preferably less than about 2.2 millimeters, and most preferably less than about 2.0 millimeters.

The secondary absorbent member 50 preferably comprises an absorbent element 56 and a liquid impervious backsheet 54 joined with the absorbent element 56. As shown in FIG. 3, the absorbent element 56 may form the body contacting surface 87 of the secondary absorbent member 50. In other preferred embodiments, as shown in FIGS. 4 and 5, the secondary absorbent member 50 comprises a liquid impervious backsheet 54, a liquid pervious topsheet 52 joined with the backsheet 54 and an absorbent element 56 positioned between the topsheet 52 and the backsheet 54. In yet other embodiments, as shown in FIG. 6, the secondary absorbent member 50 may comprise an acquisition layer 88 in addition to or in place of the topsheet 52.

The topsheet 52 can be any fluid pervious material commonly used in sanitary napkins, disposable diapers, and the like. The topsheet 52 can be any of the materials described above as being useful in the outer cover 32 of the primary absorbent member 30, including, but not limited to nonwovens and apertured formed films.

The acquisition layer 88 of the secondary absorbent member 50 may comprise any of the materials described above with regard to the primary absorbent member's 30 acquisition layer 46. In preferred embodiments, the secondary absorbent member 50 comprises an acquisition layer 88 disposed between the topsheet 52 and the absorbent element 56 as shown in FIG. 6. However, embodiments are contemplated wherein the acquisition layer 88 replaces the topsheet 52, the absorbent element 56 or both. In such configurations, the acquisition layer 88 provides any absorption characteristics desired in the secondary absorbent member 50.

The absorbent element 56 of the secondary absorbent member 50 primarily functions to protect the user's garments from soiling by absorbed fluids which may be expelled from the primary absorbent member 30 or which may inadvertently bypass the primary absorbent member 30. Thus, the absorbent element 56 of the secondary absorbent member 50 generally performs a different function from that of the absorbent core 34 and is preferably somewhat thinner and less bulky than the absorbent core 34. The absorbent element 56 may comprise any of the materials described above as being useful in the absorbent core 34 or the acquisition layers 46 and 88. However, paper tissue (either single or multiple plies) is also suitable for use in the absorbent element 56. In one preferred embodiment, the absorbent element 56 is formed of from about 1 to about 5 plies of paper tissue.

Paper tissue comprising one or more plies having a basis weight of from about 24 to about 48 grams per square meter and an apparent density of from about 0.10 to about 0.12 grams per cubic centimeter as made by the process described in U.S. Pat. No. 3,301,746 issued to Sanford and Sisson on Jan. 31, 1967 and which patent is hereby incorporated herein by reference has been found to be quite satisfactory for use as the absorbent element 56. Paper tissue made by the process described in U.S. Pat. No. 3,994,771 issued to Morgan et al. on Nov. 30, 1976, and which patent is hereby incorporated herein by reference, can also be used to good advantage as the absorbent element 56. Wet strength resins and latex binders can be, and preferably are, used to provide additional strength to the paper tissue used in the absorbent element 56.

The backsheet 54 of the secondary absorbent member 50 is preferably impervious to liquids (e.g., menses and/or urine) and is preferably manufactured from a thin plastic film, although other flexible liquid impervious materials may also be used. As used herein, the term "flexible" refers to materials which are compliant and will readily conform to the general shape and contours of the human body. In use, the backsheet 54 is interposed between the absorbent element 56 and the user's

undergarments. The function of the backsheet 54 is to prevent exudates which may be expelled from or which inadvertently bypass the primary absorbent element and exudates absorbed and contained in the absorbent element 56 from contacting and soiling the user's undergarments. The backsheet 54 may thus comprise a woven or nonwoven material, polymeric films such as thermoplastic films of polyethylene or polypropylene, or composite materials such as a film-coated nonwoven material. Preferably, the backsheet is a polyethylene film having a thickness of from about 0.012 mm (0.5 mil) to about 0.015 mm (2.0 mil). Exemplary polyethylene films are manufactured by Clopay Corporation of Cincinnati, Ohio under the designation P18-0401 and by Ethyl Corporation, Visqueen Division, of Terre Haute, Indiana, under the designation XP-39385. A suitable extensible backsheet is an extended adhesive film known as Formula #198-388 manufactured by the Findley Adhesives Company of Wauwatosa, Wisconsin. The backsheet is preferably embossed and/or matte finished to provide a more clothlike appearance. Further, the backsheet may permit vapors to escape from the absorbent element 56 (i.e., breathable) while still preventing exudates from passing through the backsheet.

In preferred embodiments, the secondary absorbent member 50 is provided with a support means or attachment means, such as adhesive attachment means 58. The adhesive attachment means 58 provides a means for securing the compound sanitary napkin 20 in the crotch portion of the user's undergarment or panty. Thus, a portion or all of the outer or garment surface 55 of the backsheet 54 is coated with adhesive. In a preferred embodiment, at least a portion of the adhesive 58 is positioned on the garment surface 55 of the backsheet 54 adjacent the longitudinal side edges 21 of the secondary absorbent member 50. Any adhesive or glue used in the art for such purposes can be used for the adhesive herein, with pressure-sensitive adhesives being preferred. Suitable adhesives are Century A-305-IV manufactured by the Century Adhesives Corporation of Columbus, Ohio; and Instant Lock 34-2823 manufactured by the National Starch and Chemical Company of Bridgewater, NJ. Suitable adhesive fasteners are also described in U.S. Pat. No. 4,917,697.

The pressure-sensitive adhesive is typically covered with a removable release liner 59 in order to keep the adhesive from drying out or adhering to a surface other than the crotch portion of the panty prior to use. Suitable release liners are also described in the above referenced U.S. Pat. No. 4,917,697. Any commercially available release liners commonly used for such purposes can be utilized herein. Non-limiting examples of suitable release liners are BL30MG-A Silox E1/0 and BL30MG-A Silox 4P/0 both of which are manufactured by the Akrosil Corporation.

of Menasha, WI. The compound sanitary napkin 20 of the present invention is used by removing the release liner 50 and thereafter placing the sanitary napkin in a panty so that the adhesive 58 contacts the panty. The adhesive 58 maintains the sanitary napkin in its position within the panty during use.

5 The secondary absorbent member 50 may also have flaps which extend laterally from the side edge of the absorbent core 34. A number of sanitary napkins having flaps suitable or adaptable for use with the secondary absorbent member 50 of the compound sanitary napkin 20 of the present invention are disclosed in U.S. Pat. No. 4,687,478 issued to Van Tilburg on Aug. 18, 1987; U.S. Pat. No. 4,589,876
10 issued to Van Tilburg on May 20, 1986; and U.S. Pat. No. 4,608,047 issued to Mattingly on Aug. 26, 1986. Each of these patents are incorporated herein by reference.

Optionally, the secondary absorbent member may comprise components that naturally wrap the sides of a wearer's panties. A sanitary napkin having components
15 that naturally wrap the sides of a wearer's panties suitable for use with the secondary absorbent member of the compound sanitary napkin 20 of the present invention are disclosed in U.S. Patent Application Serial No. 08/096,121, (P&G Case 4961) entitled "Absorbent Article having Panty Covering Components that Naturally Wrap the Sides of Panties", filed July 22, 1993, in the names of Lavash, et al and U.S.
20 Patent Application Serial No. 08/277,733 (P&G Case 5354) entitled "Absorbent Articles Having Undergarment Covering Components with Zones of Extensibility", filed July 20, 1994, in the names of Weinberger, et al. The disclosures of the preceding publications are incorporated herein by reference.

Referring now to FIG. 1, the secondary absorbent member 50 preferably has
25 a length 60 and a width 61. The secondary absorbent member 50 is preferably from about 20 to 40 cm long, more preferably from about 25 to 35 cm long, and most preferably is about 30 cm long. The secondary absorbent member 50 is preferably from about 5 to 15 cm in width, more preferably from about 5 to 10 cm in width, and most preferably from about 5 to 8 cm in width. The thickness of the secondary
30 absorbent member 50, as shown in cross-section in FIGS. 2 and 3, is generally somewhat less than its width.

The individual components of the primary absorbent member 30 and the secondary absorbent member 50 may be comprised of components that are extensible (preferably, capable of stretching) particularly in the longitudinal direction when the
35 compound sanitary napkin is worn. Preferably, the compound sanitary napkin is capable of elongating in the longitudinal direction between about 15% and about

40% of its unstretched length. This extensibility provide better in-use fit, comfort, and decreased staining when the compound sanitary napkin is affixed to the wearer's undergarments. Sanitary napkins having extensible components are described in U.S. Patent Application Serial Nos. 07/915,133 and 07/915,284 both filed July 23, 1992, in the name of Osborn, et al. (PCT Publication Nos. WO 93/01785 and 93/01786, both published February 4, 1993). The disclosures of the preceding publications are incorporated herein by reference.

In one preferred embodiment the primary absorbent member 30 and the secondary absorbent member 50 share a common length 65. The common length, refers to the length that the primary absorbent member 30 and the secondary absorbent member 50 have in common. However, it is quite possible for the secondary absorbent member to be somewhat longer than the primary absorbent member and still function effectively.

Preferably, the width of the secondary absorbent member 50 is at least 1.5 times the width of the primary absorbent member 30. More preferably, the width of the secondary absorbent member 50 is at least 2 times the width of said primary absorbent member 30. Most preferably, the width of the secondary absorbent member 50 is in the range from about 3 to about 8 times the width of the primary absorbent member 30.

To form the compound sanitary napkin of the present invention, the primary absorbent member 30 and the secondary absorbent member are joined by union means generally indicated as 70 in FIGS. 2 and 3. The precise nature of the union means is immaterial so long as the union means selected serves to join the primary absorbent member 30 and the secondary absorbent member 50 into the compound sanitary napkin 20 of the present invention with sufficient tenacity that the primary absorbent member 30 and the secondary absorbent member 50 are not disconnected during use. Union means such as adhesive attachment with well known hot melt and pressure sensitive adhesives are quite satisfactory. If the nature of the components selected to construct the constituents of the compound sanitary napkin 20 so permit, heat welding, ultrasonic welding, dynamic mechanical bonds or a combination of any of the above-mentioned means can be used.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

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WHAT IS CLAIMED IS:

1. A compound sanitary napkin comprising a primary absorbent member and a secondary absorbent member;
said primary absorbent member including an absorbent core, an outer cover, a base having a width and an apex having a width, said base being juxtaposed
5 said secondary absorbent member and said apex being vertically opposed to said base, said base width being greater than said apex width; and
said secondary absorbent member including a liquid impervious backsheet and an absorbent element joined to said backsheet, said secondary absorbent member being joined with said primary absorbent member.
- 10 2. The compound sanitary napkin of Claim 1 wherein said primary absorbent member comprises an absorbent core of generally triangular cross-section.
3. The compound sanitary napkin of Claim 1 wherein said primary absorbent
15 member comprises a containment layer.
4. The compound sanitary napkin of Claim 1 wherein said primary absorbent member comprises an acquisition layer.
- 20 5. The compound sanitary napkin of Claim 1 wherein said primary absorbent member comprises a resilient member.
6. The compound sanitary napkin of Claim 5 wherein said resilient member
25 comprises a foam.
7. The compound sanitary napkin of Claim 6 wherein said resilient member comprises a polyurethane foam.
8. The compound sanitary napkin of Claim 5 wherein said resilient member is
30 wrapped in a containment layer.
9. The compound sanitary napkin of Claim 5 wherein said resilient member is wrapped in an acquisition layer.
- 35 10. The compound sanitary napkin of Claim 5 wherein said resilient member is wrapped in both an acquisition layer and a containment layer.

11. The compound sanitary napkin of Claim 1 wherein said absorbent core comprises a plurality of core members.
12. The compound sanitary napkin of Claim 11 wherein said core members comprise a foam.
13. The compound sanitary napkin of Claim 11 wherein said primary absorbent member comprises a containment layer.
14. The compound sanitary napkin of Claim 13 wherein said core members are wrapped in a containment layer.
15. The compound sanitary napkin of Claim 11 wherein said primary absorbent member comprises an acquisition layer.
16. The compound sanitary napkin of Claim 15 wherein said core members are wrapped in an acquisition layer.
17. The compound sanitary napkin of Claim 11 wherein said core members are generally in the shape of parallelepipeds.
18. The compound sanitary napkin of Claim 11 wherein said core members comprise elongate absorbent pads of generally circular cross-section.
19. A compound sanitary napkin comprising a primary absorbent member and a secondary absorbent member;
said primary absorbent member including an absorbent core comprising a plurality of core members, an outer cover, a base having a width, and an apex having a width, said base being juxtaposed said secondary absorbent member and said apex being vertically opposed to said base, said base width being greater than said apex width; and
said secondary member including a liquid impervious backsheet and an absorbent element joined with said backsheet, said secondary absorbent member being joined with said primary absorbent member.

20. The compound sanitary napkin of Claim 19 wherein primary absorbent member further comprises a resilient member.